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Abstract

Proton-, deuteron-, triton-, ^{3}He, and α-particle production cross-sections were evaluated for proton induced reactions for 278 stable target nuclei with an atomic number from 3 to 83 for a number of incident proton energies from 62 to 1200 MeV using available experimental data and results of model calculations.

Data obtained can be used for the evaluation of gas production cross-sections at intermediate incident proton energies. An example of the use of the data is given for ^{9}Be(p,x) reactions.

CONTENTS

1. Introduction

A study of primary radiation effects in material of neutron spallation sources and other advanced units implies the use of a set of reliable data for a calculation of gas production rates for a wide range of primary proton energies and target materials. An obtaining such data is one of important challenges of applied nuclear physics. Theoretical models can solve the problem partially, giving in the best case an approximate description of experimental data. An obtaining reliable nuclear data for modern applications requires performing the data evaluation involving an analysis of experimental data and theoretical calculations as discussed in Ref.[1].

A common evaluation of an energy dependence of cross-sections leaves many important targets without considerations if the measured data are not available, and reduces the reliability of the data obtained for such targets to the quality of calculations with a global set of model parameters. Calculations leave a question about their uncertainty open, as about the reliability of obtained results.

The present work presents a new approach for obtaining reliable data for gas production cross-sections at intermediate energies. An idea is the evaluation of an atomic mass dependence of cross-sections using the available experimental information and model calculations for a certain number of incident particle energies. Such approach gives a possibility to get experimentally based values of cross-sections for targets, if the measured data are absent. The method is different from the construction of a global A-systematics, like [2,3], where predictions for target nuclei in the absence of experimental data are made basing on the global parameterization of existing data and approximate formulas.

A prerequisite for the proposed evaluation is the fairly high energy of primary particles, where the possible difference between calculations and experimental data can be attributed to the global deviations of theoretical predictions from measured data, for example to an inadequate simulation of non-equilibrium emission of particles making the contribution to the gas production cross-section.

In the present work the proton-, deuteron-, triton-, ^{3}He, and ^{4}He production cross-sections were evaluated for proton induced reactions for 278 targets from

^{7}Li to ^{209}Bi. The data were obtained for a number of incident proton energies from 62 to 1200 MeV. A criterion for selection of primary energies was a number of experimental data covering a wide range of mass numbers of target nuclei. The evaluation was performed using results of modern calculations and measured data.

Section 2 describes briefly the experimental data used for the evaluation of gas production cross-sections, their selection and possible corrections, Section 3 describes nuclear model codes used for cross-section calculations, Section 4 discussed results of calculations, and Section 5 presents results of the evaluation. An example of a practical use of data obtained is discussed in Section 6.

2. Experimental data

The experimental data used for the evaluation of gas production cross-sections in the present work were taken from Refs.[4-20]. Experiments causing any doubt, for example, they were later superseded by the authors, and works with an insufficient description of the details of measurements, which could affect the quality of the subsequent evaluation, were not selected for the present task.

The data measured in Refs.[4,5,7,8] for a limited energy range of emitted particles were corrected , as described below, to get total production cross-sections.

For target nuclei from Refs.[4,5,7,8] the particle energy distributions were calculated at the proton incident energy equal to 62 and 90 MeV using the TALYS code [21] with various *ldmodel* options from 1 to 5 corresponding to different models applied for the calculation of the nuclear level density for excited nuclei. For each reaction the calculated part of cross-section σ above the experimental low energy cutoff E_{min} was normalized on the measured value; the obtained cross-section was added to the calculated part of σ below E_{min} multiplied by the obtained coefficient to get the total production cross-section. The final value for each case was obtained by the averaging of results obtained using different *ldmodel* options.

The estimation of the particle production cross-sections at the proton energy 1.2 GeV using measured data from Ref.[8] was done using an intranuclear cascade

evaporation model implemented in the CASCADE code [22-24], see Section 3. Default input parameters of a coalescence model applied for the simulation of non-equilibrium cluster emission were slightly changed to get a full agreement between calculated and measured pre-equilibrium parts of σ at energies of outgoing particles below 100 MeV. The calculated pre-equilibrium contributions to production cross-sections above 100 MeV were added to experimental cross-sections to get total production cross-sections for hydrogen and helium isotopes.

In a number of cases the experimental data are available near and not exactly at a certain energy of protons E_p, which selection for future evaluation seems reasonable. Data of such measurements were reduced to E_p using general energy dependence of investigated cross-sections calculated for a specific nuclear reaction. The discussed "shift" of the proton energy results to a slight difference of data from original measurements and values adopted for the cross-section evaluation and presented below.

For example, to use the experimental information for σ at the proton incident energy 800 MeV for a largest possible amount of target nuclei, the data from Ref.[20] measured at E_p equal to 750 MeV were reduced to the proton energy 800 MeV using the energy trend of helium production cross-sections predicted by the intranuclear cascade evaporation model. The change of cross-sections seems rather small comparing with the difference of data measured by different authors.

The improved and corrected experimental cross-sections σ^{exp} used in the present work for the evaluation of gas production cross-sections are shown in Tables 1-21. In the most cases an error of the particle production cross-section Δσ shown in Tables is not the original error reported in corresponding experimental works. The Δσ values reflect performed corrections and improvements, and originate from a common experience of the work with such kind of the data. It may be noted that some experimental works, for example Ref.[20], do not provide any information about the error of measured cross-sections.

Table 1. Cross-sections σ^{exp} adopted for the evaluation of proton production cross-section (p,x)p in proton induced reactions at the incident proton energy around 62 MeV. See details in the text

Nucleus	Cross-section (mb)	Origin
^{12}C	357.9 ± 107.4	[4]
^{16}O	494.1 ± 148.2	[4]
^{27}Al	774.5 ± 232.3	[4]
^{nat}Si	854.0 ± 256.2	[5]
^{54}Fe	1684.3 ± 505.3	[4]
^{56}Fe	1130. ± 339.	[4]
^{89}Y	869. ± 260.7	[4]
^{120}Sn	811. ± 243.3	[4]
^{197}Au	654.6 ± 196.4	[4]
^{208}Pb	653.0 ± 195.9	[6]
^{209}Bi	707.3 ± 212.2	[4]

Table 2. Cross-sections σ^{exp} adopted for the evaluation of (p,x)p production cross-section at the projectile energy equal to 90 MeV.

Nucleus	Cross-section (mb)	Origin
^{27}Al	787. ± 236.	[7]
^{58}Ni	1798. ± 539.	[7]
^{90}Zr	1438. ± 431.	[7]
^{209}Bi	1297. ± 389.	[7]

Table 3. Cross-sections σ^{exp} adopted for the evaluation of (p,x)p production cross-section at the projectile energy equal to 1.2 GeV.

Nucleus	Cross-section (mb)	Origin
^{27}Al	1309. ± 201.	[8]
^{nat}Ti	2462. ± 281.	[8]

Table 3 continued

^{nat}Fe	2780. ± 351.	[8]
^{nat}Ni	3592. ± 392.	[8]
^{nat}Cu	3204. ± 404.	[8]
^{nat}Zr	4214. ± 448.	[8]
^{nat}Ag	4900. ± 494.	[8]
^{165}Ho	5576. ± 643.	[8]
^{181}Ta	6051. ± 594.	[8]
^{nat}W	5930. ± 613.	[8]
^{197}Au	6399. ± 644.	[8]
^{nat}Pb	5965. ± 724.	[8]

Table 4. Cross-sections σ^{exp} adopted for the evaluation of deuteron production cross-section (p,x)d in proton induced reactions at the incident proton energy around 62 MeV.

Nucleus	Cross-section (mb)	Origin
^{12}C	73.2 ± 22.0	[4]
^{16}O	83.3 ± 25.0	[4]
^{27}Al	90.1 ± 27.0	[4]
^{nat}Si	75.9 ± 22.8	[5]
^{54}Fe	87.3 ± 26.2	[4]
^{56}Fe	89.4 ± 26.8	[4]
^{89}Y	78.4 ± 23.5	[4]
^{120}Sn	95.1 ± 28.5	[4]
^{197}Au	86.0 ± 25.8	[4]
^{208}Pb	85.4 ± 21.4	[6]
^{209}Bi	95.0 ± 28.5	[4]

Table 5. Cross-sections σ^{exp} adopted for the evaluation of (p,x)d production cross-section at the projectile energy equal to 90 MeV.

Nucleus	Cross-section (mb)	Origin
^{27}Al	94.9 ± 28.5	[7]
^{58}Ni	118.4 ± 35.5	[7]
^{90}Zr	144.0 ± 43.2	[7]
^{209}Bi	153.0 ± 45.9	[7]

Table 6. Cross-sections σ^{exp} adopted for the evaluation of (p,x)d production cross-section at the projectile energy equal to 1.2 GeV.

Nucleus	Cross-section (mb)	Origin
^{27}Al	210. ± 37.	[8]
^{nat}Ti	423. ± 53.	[8]
^{nat}Fe	426. ± 59.	[8]
^{nat}Ni	492. ± 59.	[8]
^{nat}Cu	503. ± 68.	[8]
^{nat}Zr	736. ± 79.	[8]
^{nat}Ag	845. ± 87.	[8]
^{165}Ho	1120. ± 130.	[8]
^{181}Ta	1210. ± 120.	[8]
^{nat}W	1180. ± 120.	[8]
^{197}Au	1350. ± 130.	[8]
^{nat}Pb	1240. ± 140.	[8]

Table 7. Cross-sections σ^{exp} adopted for the evaluation of triton production cross-section (p,x)t in proton induced reactions at the incident proton energy around 62 MeV.

Nucleus	Cross-section (mb)	Origin
^{12}C	21.9 ± 6.6	[4]
^{16}O	15.5 ± 4.7	[4]

Table 7 continued

^{27}Al	11.7 ± 3.5	[4]
^{nat}Si	10.7 ± 3.2	[5]
^{54}Fe	7.33 ± 2.20	[4]
^{56}Fe	13.4 ± 4.0	[4]
^{89}Y	13.0 ± 3.9	[4]
^{120}Sn	23.6 ± 7.1	[4]
^{197}Au	21.3 ± 6.4	[4]
^{208}Pb	27.4 ± 6.9	[6]
^{209}Bi	27.2 ± 8.2	[4]

Table 8. Cross-sections σ^{exp} adopted for the evaluation of (p,x)t production cross-section at the projectile energy equal to 90 MeV.

Nucleus	Cross-section (mb)	Origin
^{27}Al	14.7 ± 4.4	[7]
^{58}Ni	14.2 ± 4.3	[7]
^{90}Zr	24.2 ± 7.3	[7]
^{209}Bi	45.0 ± 13.5	[7]

Table 9. Cross-sections σ^{exp} adopted for the evaluation of (p,x)t production cross-section at the projectile energy equal to 150 MeV.

Nucleus	Cross-section (mb)	Origin
^{27}Al	12.2 ± 3.7	[9,10]
^{nat}Fe	7.95 ± 2.40	[9]
^{nat}Fe	13.1 ± 5.5	[11]
^{nat}Sn	16.60 ± 5.0	[10]
^{208}Pb	33.2 ± 10.0	[11]

Table 10. Cross-sections σ^{exp} adopted for the evaluation of (p,x)t production cross-section at the projectile energy equal to 660 MeV.

Nucleus	Cross-section (mb)	Origin
^{12}C	31.0 ± 3.1	[12]
^{12}C	10.6 ± 1.7	[9]
^{12}C	33.5 ± 4.2	[13]
^{12}C	60. ± 24.	[14]
^{27}Al	30. ± 3.	[10]
^{27}Al	42. ± 6.	[9]
^{27}Al	43.3 ± 13.0	[11]
^{nat}Si	36.5 ± 11.0	[13]
^{nat}Fe	53.4 ± 16.0	[11]
^{nat}Sn	61. ± 18.	[10]
^{nat}Pb	133. ± 14.	[10]
^{208}Pb	170. ± 51.	[11]

Table 11. Cross-sections σ^{exp} adopted for the evaluation of (p,x)t production cross-section at the projectile energy equal to 1.2 GeV.

Nucleus	Cross-section (mb)	Origin
^{12}C	35.8 ± 10.7	[13]
^{27}Al	62.8 ± 14.2	[8]
^{nat}Ti	124. ± 19.	[8]
^{nat}Fe	110. ± 17.	[8]
^{nat}Ni	118. ± 15.	[8]
^{nat}Cu	142. ± 22.	[8]
^{nat}Zr	228. ± 27.	[8]
^{nat}Ag	273. ± 30.	[8]
^{165}Ho	466. ± 50.	[8]
^{181}Ta	526. ± 47.	[8]
^{nat}W	506. ± 49.	[8]

Table 11 continued

^{197}Au	562. ± 51.	[8]
^{nat}Pb	570. ± 65.	[8]

Table 12. Cross-sections σ^{exp} adopted for the evaluation of ^{3}He production cross-section (p,x)^{3}He in proton induced reactions at the incident proton energy around 62 MeV.

Nucleus	Cross-section (mb)	Origin
^{12}C	33.8 ± 16.9	[4]
^{16}O	26.5 ± 13.3	[4]
^{nat}Mg	11.3 ± 3.4	[15]
^{27}Al	9.2 ± 2.8	[15]
^{27}Al	12.3 ± 6.2	[4]
^{nat}Si	17.9 ± 5.4	[5]
^{nat}Si	17.6 ± 8.8	[15]
^{54}Fe	9.62 ± 4.81	[4]
^{nat}Fe	9.1 ± 2.7	[16]
^{nat}Ni	9.25 ± 2.8	[16]
^{89}Y	4.0 ± 2.0	[4]
^{120}Sn	3.35 ± 1.67	[4]
^{197}Au	2.30 ± 1.15	[4]
^{nat}Pb	4.2 ± 2.1	[17,18]
^{208}Pb	3.00 ± 0.75	[6]
^{209}Bi	2.58 ± 1.29	[4]

Table 13. Cross-sections σ^{exp} adopted for the evaluation of (p,x)^{3}He production cross-section at the projectile energy equal to 90 MeV.

Nucleus	Cross-section (mb)	Origin
^{nat}Mg	13.5 ± 4.0	[15]
^{27}Al	15.4 ± 4.6	[7]

Table 13 continued

^{27}Al	10.8 ± 3.2	[15]
^{nat}Si	17.3 ± 7.0	[15]
^{nat}Fe	12.0 ± 3.6	[16]
^{58}Ni	13.3 ± 4.0	[7]
^{nat}Ni	13.2 ± 1.2	[16]
^{90}Zr	12.14 ± 3.64	[7]
^{nat}Pb	4.52 ± 1.81	[17,18]
^{209}Bi	8.00 ± 2.40	[7]

Table 14. Cross-sections σ^{exp} adopted for the evaluation of (p,x)^{3}He production cross-section at the projectile energy equal to 150 MeV.

Nucleus	Cross-section (mb)	Origin
^{nat}Mg	13.7 ± 5.4	[15]
^{27}Al	13.9 ± 5.6	[15]
^{nat}Si	18.4 ± 5.5	[15]
^{nat}Fe	16.3 ± 4.9	[16]
^{nat}Ni	18.5 ± 5.55	[16]
^{nat}Pb	6.07 ± 1.82	[17,18]
^{209}Bi	6.93 ± 2.10	[18]

Table 15. Cross-sections σ^{exp} adopted for the evaluation of (p,x)^{3}He production cross-section at the projectile energy equal to 800 MeV.

Nucleus	Cross-section (mb)	Origin
^{12}C	39.3 ± 12.0	[13]
^{nat}Mg	42.5 ± 3.0	[19]
^{27}Al	33.9 ± 6.8	[20]
^{27}Al	47.7 ± 3.4	[19]
^{nat}Si	54.3 ± 3.8	[19]

Table 15 continued

^{nat}Fe	63.9 ± 4.7	[19]
^{nat}Fe	56. ± 11.	[20]
^{nat}Fe	75.6 ± 4.7	[16]
^{nat}Ni	60.9 ± 12.2	[20]
^{nat}Ni	81.0 ± 7.3	[16]
^{nat}Ni	70.2 ± 4.9	[19]
^{nat}Cu	52.2 ± 10.4	[20]
^{nat}Mo	60.9 ± 12.2	[20]
^{nat}W	56.8 ± 11.4	[20]
^{197}Au	61.3 ± 18.4	[20]
^{nat}Pb	29.2 ± 8.8	[17,18]
^{209}Bi	27.85 ± 8.36	[18]

Table 16. Cross-sections σ^{exp} adopted for the evaluation of (p,x)^{3}He production cross-section at the projectile energy equal to 1.2 GeV.

Nucleus	Cross-section (mb)	Origin
^{12}C	40. ± 12.	[13]
^{nat}Mg	44.5 ± 13.4	[15]
^{nat}Mg	53.3 ± 3.7	[19]
^{27}Al	52.4 ± 3.7	[19]
^{27}Al	46.3 ± 7.2	[8]
^{nat}Si	62.7 ± 18.8	[15]
^{nat}Si	70.8 ± 5.0	[19]
^{nat}Ti	57.1 ± 6.1	[8]
^{nat}Fe	94.9 ± 7.9	[16]
^{nat}Fe	86.8 ± 6.3	[19]
^{nat}Fe	67.8 ± 8.2	[8]
^{nat}Ni	128.9 ± 7.4	[16]
^{nat}Ni	90.9 ± 6.6	[19]

Table 16 continued

^{nat}Ni	78.0 ± 8.2	[8]
^{nat}Cu	73.5 ± 8.2	[8]
^{nat}Zr	77.7 ± 9.3	[8]
^{nat}Ag	87.4 ± 11.3	[8]
^{165}Ho	76.6 ± 12.4	[8]
^{181}Ta	79.6 ± 12.4	[8]
^{nat}W	80.7 ± 12.4	[8]
^{197}Au	83.0 ± 12.4	[8]
^{nat}Pb	81.3 ± 13.6	[8]
^{nat}Pb	49.1 ± 14.7	[17,18]
^{209}Bi	39.8 ± 12.0	[18]

Table 17. Cross-sections σ^{exp} adopted for the evaluation of α-particle production cross-section (p,x)α in proton induced reactions at the incident proton energy around 62 MeV.

Nucleus	Cross-section (mb)	Origin
^{12}C	246. ± 37.	[4]
^{16}O	253. ± 38.	[4]
^{nat}Mg	242. ± 37.	[15]
^{27}Al	169. ± 25.	[4]
^{27}Al	198. ± 30.	[15]
^{nat}Si	161. ± 24.	[5]
^{nat}Si	200. ± 52.	[15]
^{54}Fe	149.5 ± 22.4	[4]
^{nat}Fe	168. ± 25.	[16]
^{nat}Ni	162. ± 24.	[16]
^{89}Y	100.5 ± 15.1	[4]
^{120}Sn	64.0 ± 9.6	[4]
^{197}Au	32.1 ± 4.8	[4]

Table 17 continued

^{nat}Pb	23.9 ± 8.6	[17]
^{208}Pb	28.1 ± 7.0	[6]
^{209}Bi	34.1 ± 5.1	[4]

Table 18. Cross-sections σ^{exp} adopted for the evaluation of (p,x)α production cross-section at the projectile energy equal to 90 MeV.

Nucleus	Cross-section (mb)	Origin
^{nat}Mg	226. ± 36.	[15]
^{27}Al	164. ± 25.	[7]
^{27}Al	197. ± 30.	[15]
^{nat}Si	203. ± 53.	[15]
^{nat}Fe	174. ± 26.	[16]
^{58}Ni	248. ± 37.	[7]
^{nat}Ni	176. ± 16.	[16]
^{90}Zr	157. ± 24.	[7]
^{nat}Pb	41.9 ± 7.1	[17]
^{209}Bi	87.2 ± 13.1	[7]

Table 19. Cross-sections σ^{exp} adopted for the evaluation of (p,x)α production cross-section at the projectile energy equal to 150 MeV.

Nucleus	Cross-section (mb)	Origin
^{nat}Mg	209. ± 31.	[15]
^{27}Al	197. ± 30.	[15]
^{nat}Si	196. ± 29.	[15]
^{nat}Fe	169. ± 25.	[16]
^{nat}Ni	194. ± 29.	[16]
^{nat}Pb	67.0 ± 10.0	[17]
^{209}Bi	136. ± 20.	[18]

Table 20. Cross-sections σ^{exp} adopted for the evaluation of (p,x)α production cross-section at the projectile energy equal to 800 MeV.

Nucleus	Cross-section (mb)	Origin
^{12}C	216. ± 65.	[13]
^{nat}Mg	368. ± 15.	[19]
^{27}Al	371. ± 18.	[19]
^{27}Al	304. ± 91.	[20]
^{nat}Si	405. ± 17.	[19]
^{nat}Fe	556. ± 40.	[19]
^{nat}Fe	477. ± 143.	[20]
^{nat}Fe	533. ± 23.	[16]
^{nat}Ni	494. ± 149.	[20]
^{nat}Ni	562. ± 26.	[16]
^{nat}Ni	589. ± 25.	[19]
^{nat}Cu	463. ± 139.	[20]
^{nat}Mo	603. ± 180.	[20]
^{nat}W	776. ± 233.	[20]
^{197}Au	679. ± 204.	[20]
^{nat}Pb	712. ± 214.	[17]
^{209}Bi	768. ± 230.	[18]

Table 21. Cross-sections σ^{exp} adopted for the evaluation of (p,x)α production cross-section at the projectile energy equal to 1.2 GeV.

Nucleus	Cross-section (mb)	Origin
^{12}C	211. ± 63.	[13]
^{nat}Mg	418. ± 17.	[19]
^{27}Al	427. ± 18.	[19]
^{27}Al	317. ± 86.	[8]
^{nat}Si	470. ± 19.	[19]
^{nat}Ti	466. ± 82.	[8]

Table 21 continued

^{nat}Fe	692. ± 47.	[16]
^{nat}Fe	705. ± 52.	[19]
^{nat}Fe	512. ± 73.	[8]
^{nat}Ni	753. ± 46.	[16]
^{nat}Ni	774. ± 56.	[19]
^{nat}Ni	578. ± 74.	[8]
^{nat}Cu	597. ± 69.	[8]
^{nat}Zr	779. ± 67.	[8]
^{nat}Ag	1004. ± 84.	[8]
^{165}Ho	1206. ± 111.	[8]
^{181}Ta	1389. ± 101.	[8]
^{nat}W	1338. ± 111.	[8]
^{197}Au	1454. ± 111.	[8]
^{nat}Pb	1159. ± 196.	[17]
^{nat}Pb	1364. ± 141.	[8]
^{209}Bi	1084. ± 275.	[18]

3. Calculation of gas production cross-sections

The calculation of gas production cross-sections were performed using advanced nuclear models implemented in ALICE/ASH [25], TALYS [21], CASCADE [24], CEM03 [26], and INCL4/ABLA [26] codes. Important details of calculations are described below.

3.1 ALICE/ASH

The ALICE/ASH code [25] is a modified and improved version of the ALICE code originated by M.Blann. The geometry dependent hybrid model (GDH) [27] is used for the description of the pre-equilibrium particle emission. Intranuclear transition

rates are calculated using the effective cross-section of nucleon-nucleon interactions in nuclear matter. Corrections are made to the GDH approach for the treatment of effects in peripheral nuclear regions. The exciton state density is calculated taking into account pairing corrections, the correction for the Pauli principle and the final depth of the nuclear potential well for the exciton state. The number of neutrons and protons for initial exciton state is calculated using realistic nucleon-nucleon interaction cross-sections in nucleus.

The exciton coalescence model [28,29] and the knock-out model are used for the description of the pre-equilibrium complex particle emission. The parameters of models are discussed in Refs.[30-32]. The equilibrium emission of particles is described by the Weisskopf-Ewing model. An extensive description of calculations using ALICE/ASH can be found in Ref.[25].

Fig.1 shows an example of cross-sections calculated using ALICE/ASH relevant to the present task.

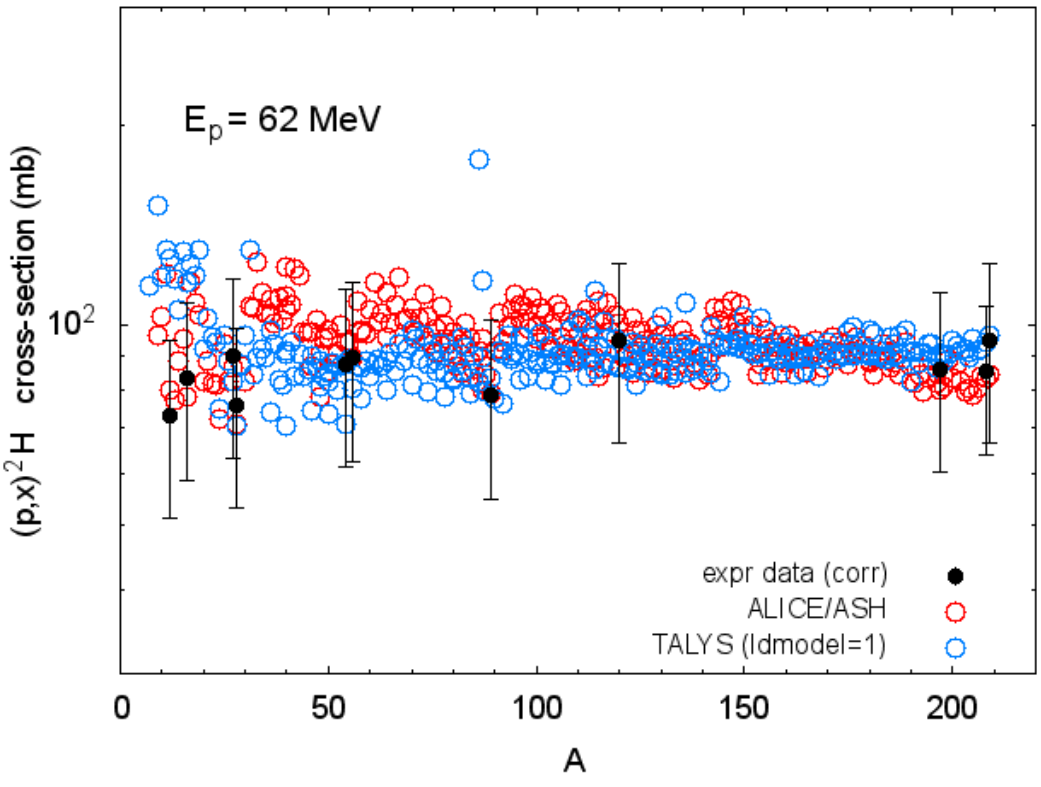

Fig.1 Example of calculations performed using the ALICE/ASH code and the TALYS code with the input variable *ldmodel*=1 for deuteron production cross-sections for 278 stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 62 MeV. See explanations in the text.

3.2 TALYS

The detail description of the code is presented by authors in Ref.[21]. The brief discussion of models implemented in TALYS relevant to the present calculations can be found in Ref.[1].

Calculations are performed using a pre-equilibrium exciton model and Hauser-Feshbach model. The nuclear level density is calculated using different approaches listed below together with corresponding input variables *ldmodel* i) the Fermi gas model with the energy dependent level density parameter combined with the "constant temperature" model, *ldmodel=1*, ii) the back-shifted Fermi gas model, *ldmodel=2,* iii) the generalized superfluid model, *ldmodel=3,* iv) microscopic approach of Goriely, *ldmodel=4,* and v) of Hilaire, *ldmodel=5*. The references for each case can be found in Refs.[21,1].

As a rule, calculations using different model for description of nuclear level density result to different values of gas production cross-sections. Such calculations should be considered with some reservation as independent origins of the data investigated [1].

In the present work gas production cross-sections calculated with TALYS applying various *ldmodel* options were used for the cross-section evaluation together with experimental data discussed in Section 2.

The example of cross-sections calculated using TALYS is shown in Fig.1.

3.3 CASCADE

Calculations are performed using intranuclear cascade evaporation model [22-24]. The specific features of the model are the simulation of realistic nucleon density distribution in nuclei and the effect of the density change during the fast particle emission. The nuclear density is modeled by the Woods-Saxon distribution and for light nuclei by the harmonic-oscillator distribution.

The non-equilibrium emission of light clusters (d, t, ^{3}He, α) is simulated using a coalescence model [33-35]. The modifications are discussed in Ref.[1].

In the present work the modeling of evaporation particle emission is performed using Weisskopf-Ewing model with parameters fitted to experimental production cross-sections [8]. Obtained parameters were implemented in the code as default input values.

Other details of modeling using the CASCADE code can be found in Refs.[1,24].

Fig.2 shows typical results of CASCADE calculations.

3.4 CEM03

The simulation of nuclear processes is performed using the Cascade Exciton Model [36] combining the intranuclear cascade model, the pre-equilibrium exciton model, and the evaporation model. Many improvements and refinements of CEM performed in the last years [37,38] make the model one of the most reliable tools for the study of nuclear reactions at intermediate energies.

Present calculations were performed using the version of the code from Ref.[26]. The example of calculated cross-sections is shown in Fig.2.

3.5 INCL4/ABLA

INCL4 is a parameter-free time-like cascade model simulating the history of all particles undergoing binary collisions, imposed by a minimum distance of approach criterion and subject to the Pauli blocking factor [39]. A specific feature of INCL is a self-consistent determination of the stopping time [39]. ABLA is an advanced evaporation code [40].

As well as CEM03, the INCL4/ABLA code [41,42] belongs to the most successful, reliable and popular tools for modeling of interactions of intermediate and high energy particles with a matter.

The code version from Ref.[26] was used in the present work. The example of cross-sections calculated with INCL4/ABLA is shown in Fig.2.

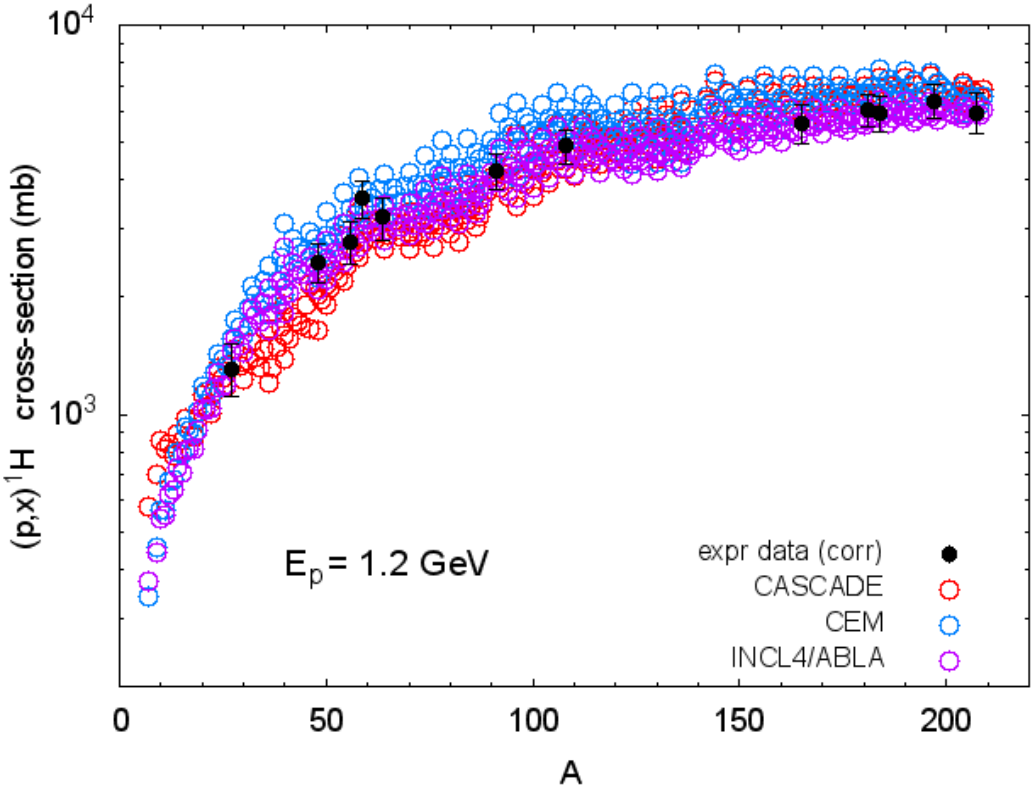

Fig.2 Example of calculations performed using CASCADE, CEM03, and INCL4/ABLA code for proton production cross-sections for 278 stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 1.2 GeV. See explanations in the text.

4. Results of calculations

Calculations of components of hydrogen and helium production cross-sections were performed for a number of primary proton energies using ALICE/ASH, TALYS, CASCADE, CEM, and INCL4/ABLA codes with global sets of input parameters. As a result, cross-sections were obtained for 278 of stable nuclei from ^{7}Li to ^{209}Bi.

Proton-, deuteron-, triton-, ^{3}He-, and α-particle production cross-section calculations were carried at the incident proton energy equal to 62, 90, and 150 MeV using ALICE/ASH and TALYS codes , and at E_p equal to 660, 800, and 1200 MeV using codes implementing intranuclear cascade evaporation model.

The choice of the E_p value was discussed in Section 2. The evaluation of cross-sections for each product was performed for a part of the set of incident energies given above, depending on experimental data. For example, the data for

reaction (p,x)d reactions were evaluated for proton incident energy equal to 62, 90, 150, 660, and 1200 MeV.

Figures showing results of calculations using the ALICE/ASH code together with experimental data, Tables 1-21, are presented in Appendix A, results of TALYS calculations applying different models for nuclear level density calculations are given in Appendix B, and results of CASCADE are presented in Appendix C.

Comparison of data in Figures of Appendixes A-C show an agreement between general trend of calculated cross-sections and measured data with a change of atomic mass number A. In many cases an observed systematic deviation of model predictions and experimental data can be attributed to the deficiency of models or sets of model parameters responsible for the simulation of the non-equilibrium particle emission. Such deviations can be easily "removed" in the evaluation procedure for gas production cross-sections.

For some reactions the cross-sections calculated using the TALYS code with options *ldmodel* equal to 4 and 5 show a scattering of obtained results especially for high A-values in contrast to calculations with *ldmodel* from 1 to 3. Because of the nature of the observed difference is not clear, results of calculations with *ldmodel* equal to 4 and 5 were not included in the evaluation procedure.

Calculated cross-sections were used for the evaluation of components of hydrogen and helium production cross-sections as discussed below.

5. Evaluated data

The evaluation was performed using results of model calculations and the measured data discussed in Section 2. The BEKED package [43] was applied for computations.

The deviation of calculated σ from the measured data was attributed to the global deficiency of models applied, particularly, to the sets of parameters of non-equilibrium models, which utilization can be improved by the redefinition of their

general A-dependence. Estimated errors of evaluated production cross-sections result from the application of different nuclear models discussed in Section 3, measurements, and the procedure of the data improvement described in Section 2.

Evaluated proton-, deuteron-, triton-, ^{3}He, and α-particle production cross-sections for 278 stable target nuclei are shown in Figs.3-23. The cross-sections for natural mixtures of isotopes are presented in Appendix D.

The numerical values of evaluated cross-sections are given in Appendix E.

Obtained cross-sections can be applied as the reference data for the evaluation of gas production cross-sections and correction of theoretical calculations in a wide energy range of primary proton energies. An example of the use of data obtained is given below.

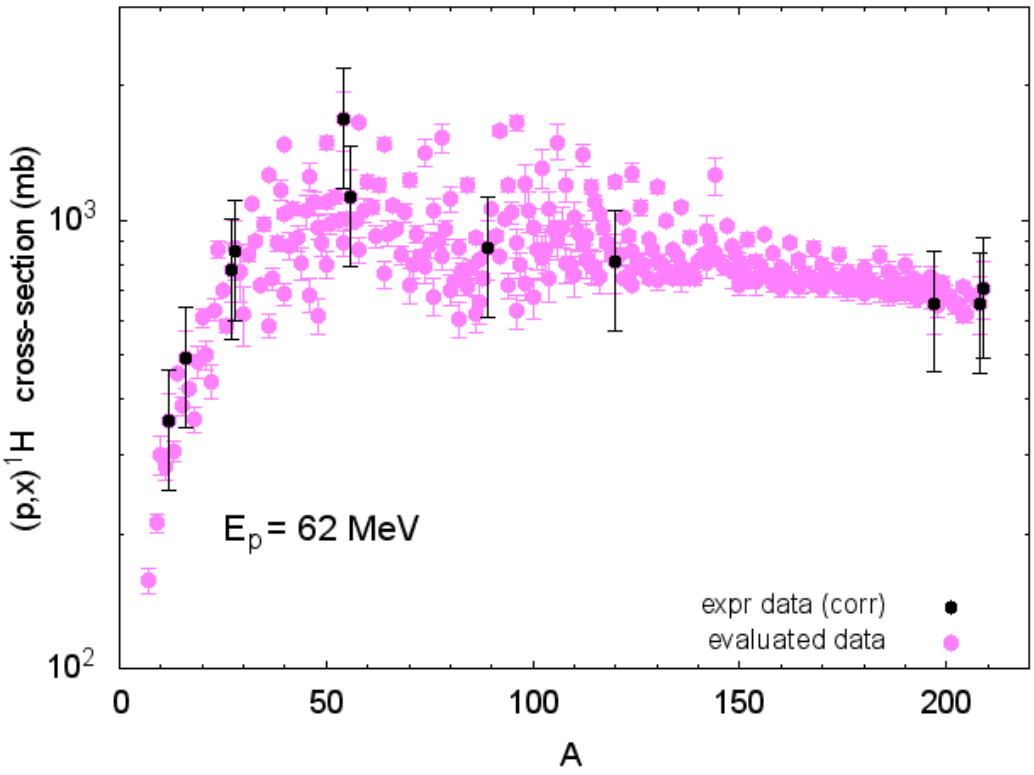

Fig.3 Evaluated proton production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 62 MeV.

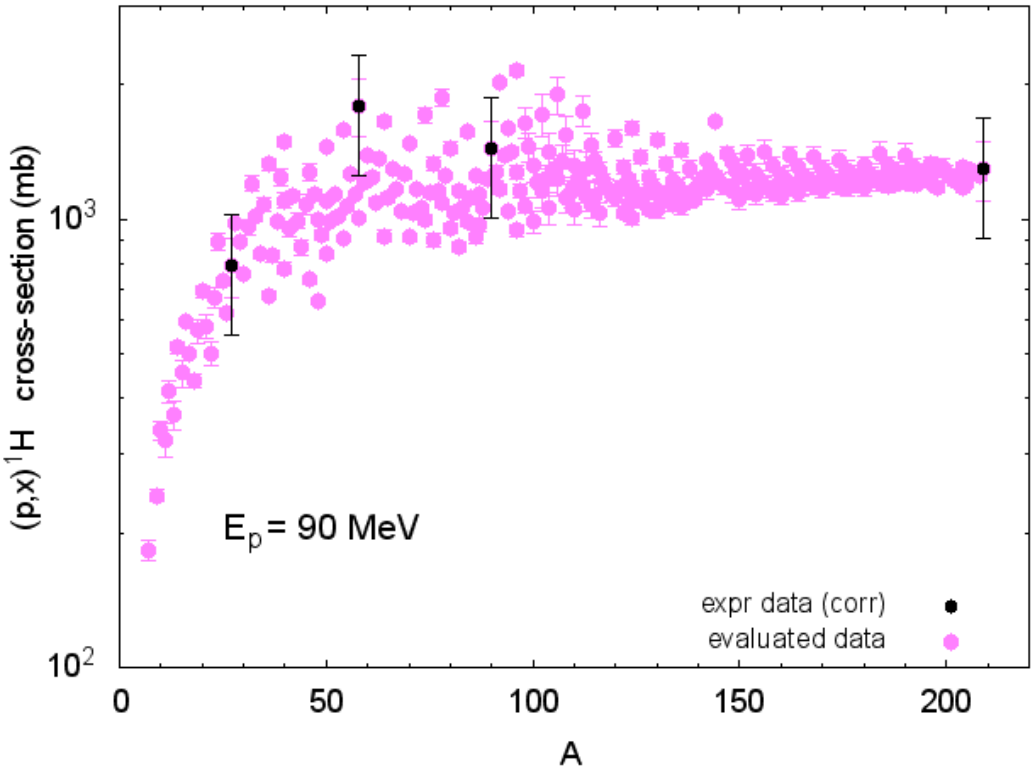

Fig.4 Evaluated proton production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 90 MeV.

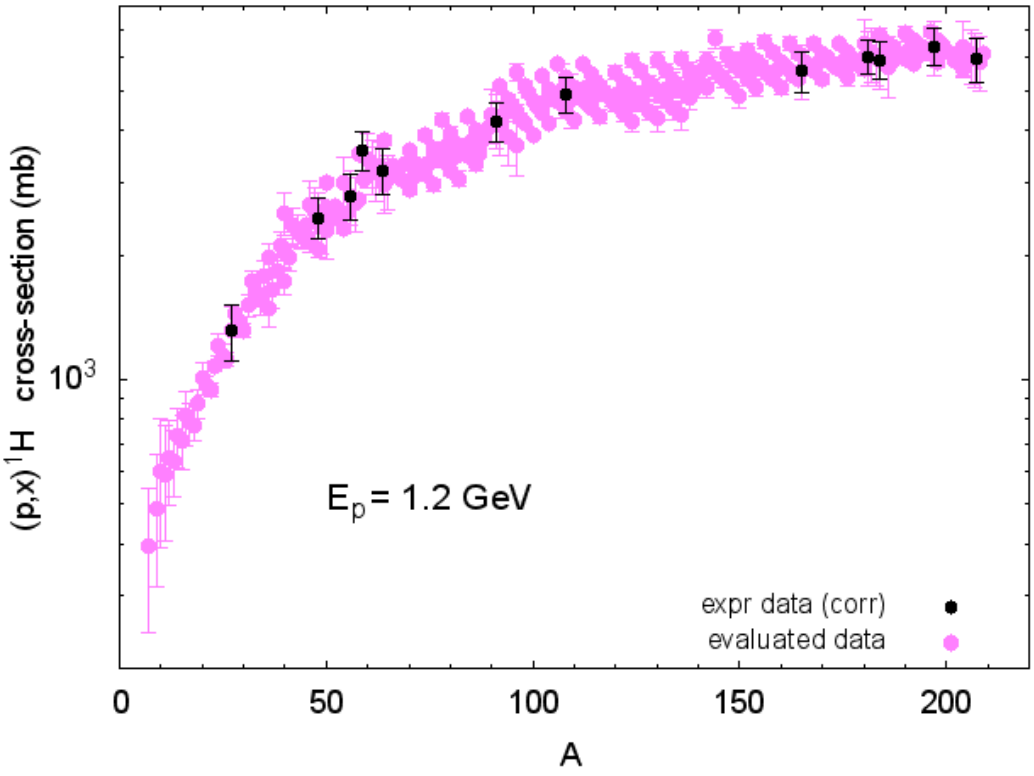

Fig.5 Evaluated proton production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 1200 MeV.

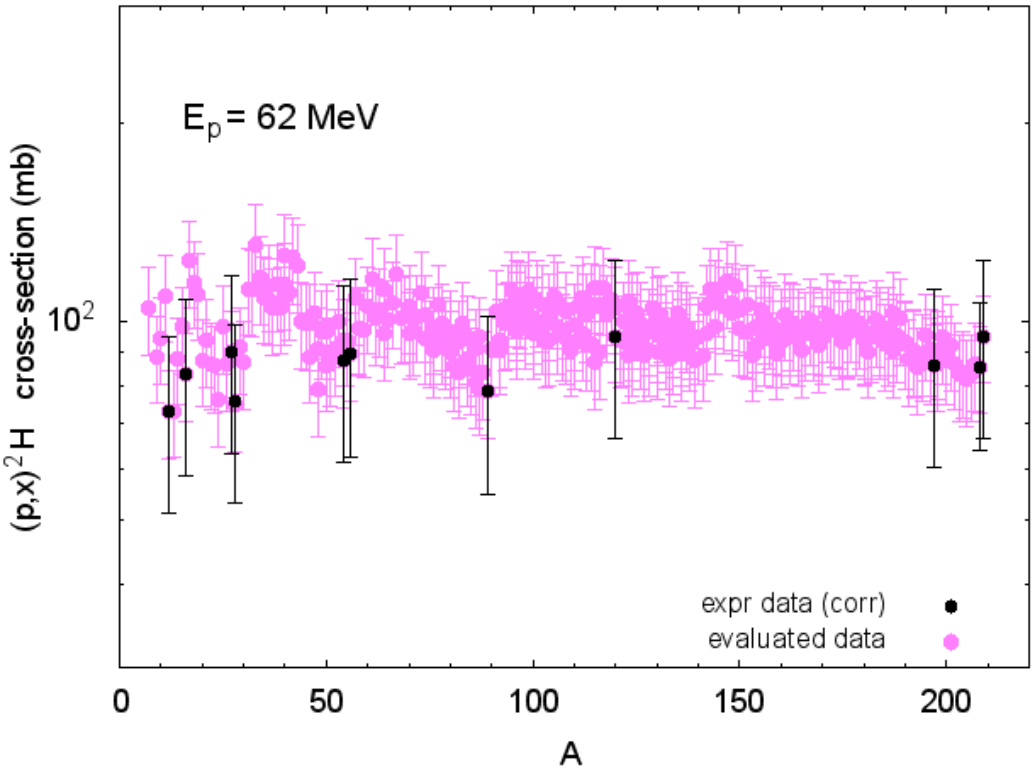

Fig.6 Evaluated deuteron production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 62 MeV.

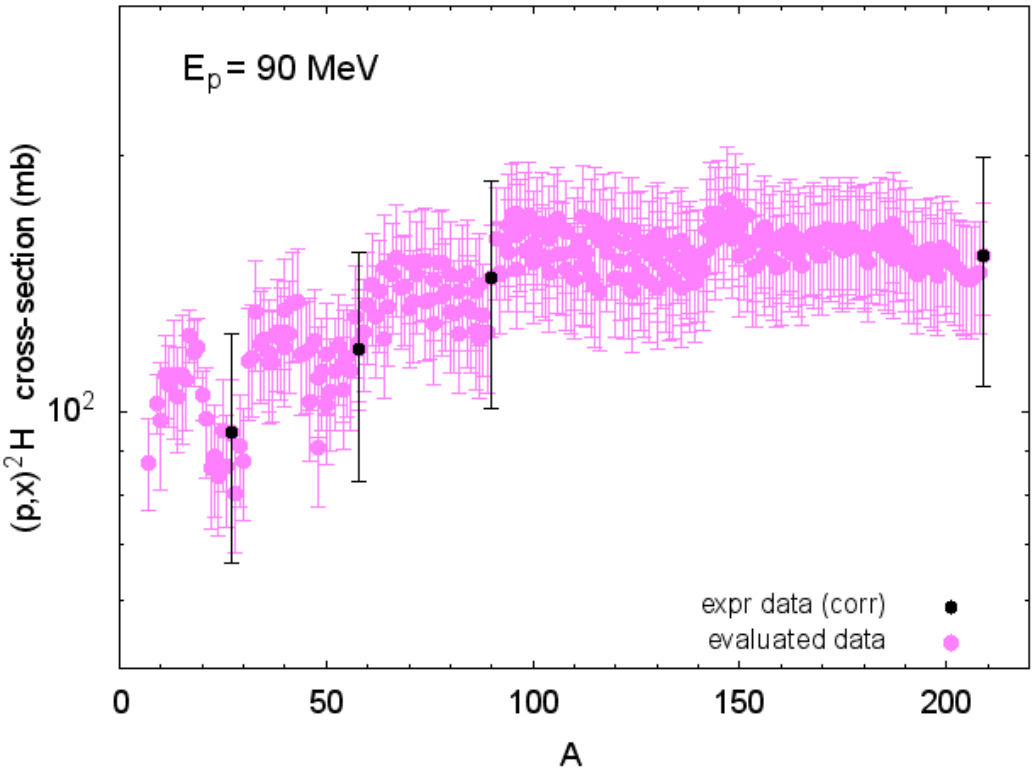

Fig.7 Evaluated deuteron production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 90 MeV.

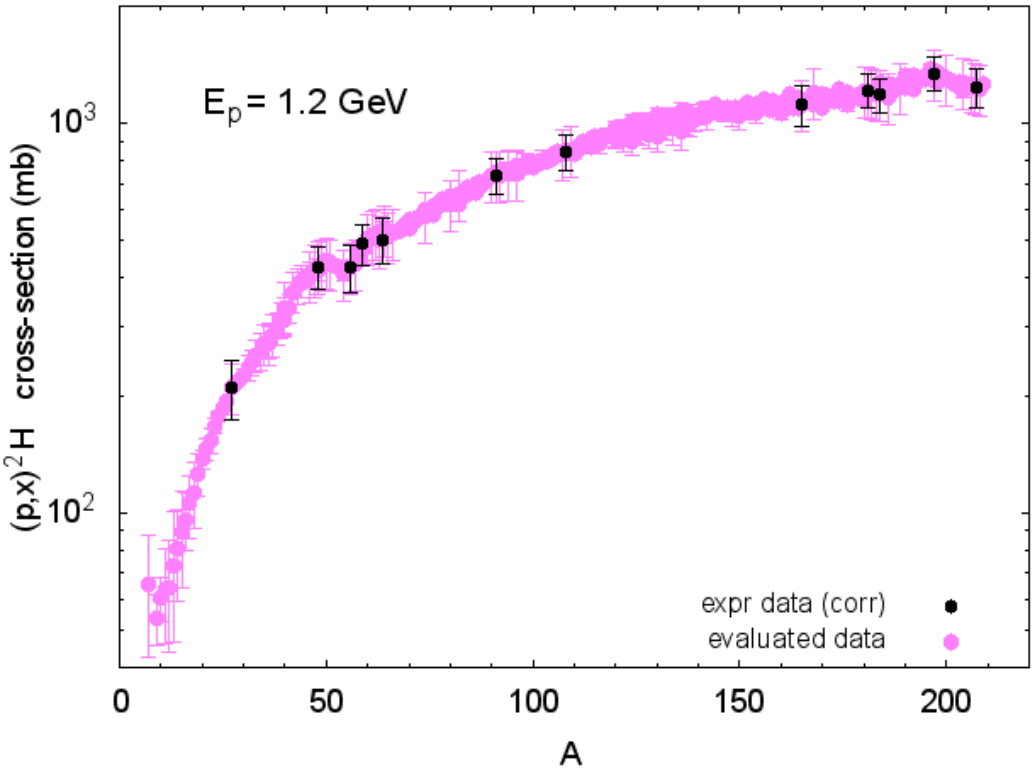

Fig.8 Evaluated deuteron production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 1200 MeV.

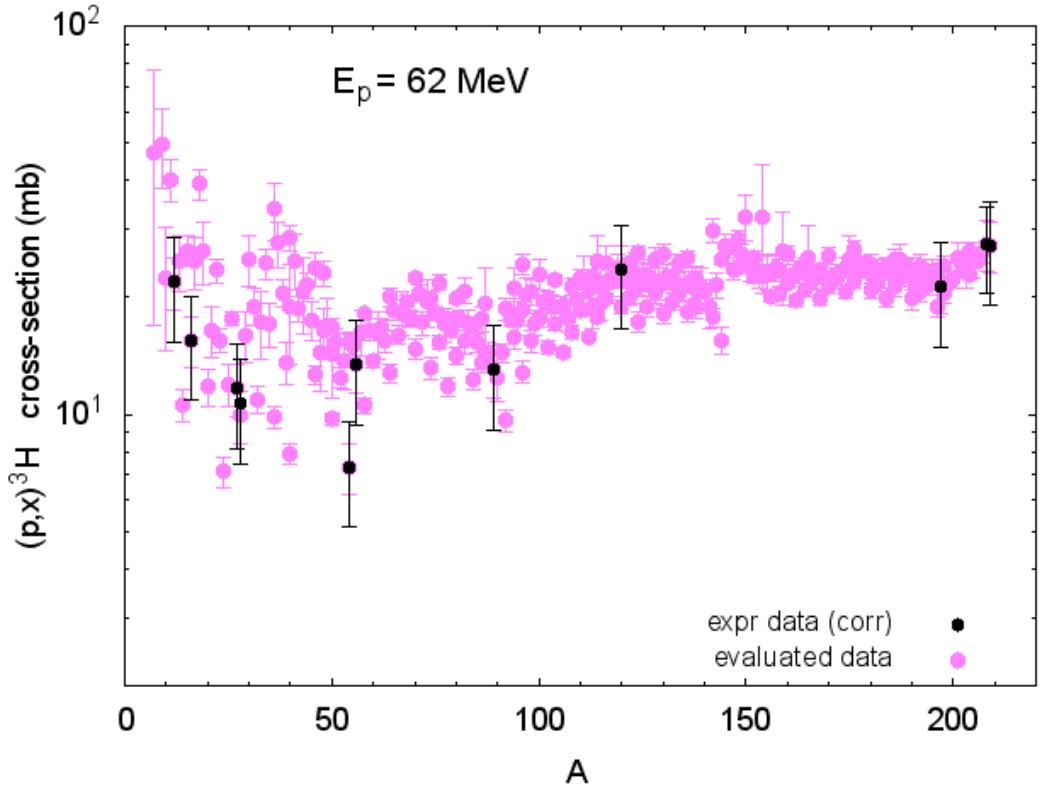

Fig.9 Evaluated triton production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 62 MeV.

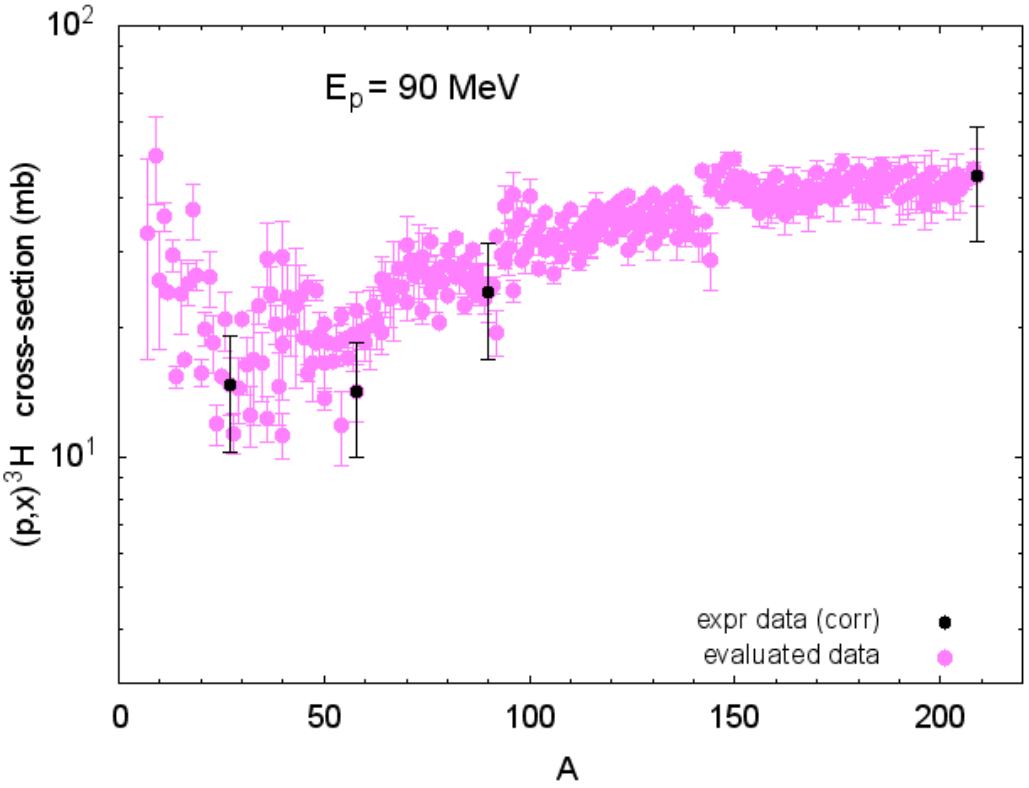

Fig.10 Evaluated triton production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 90 MeV.

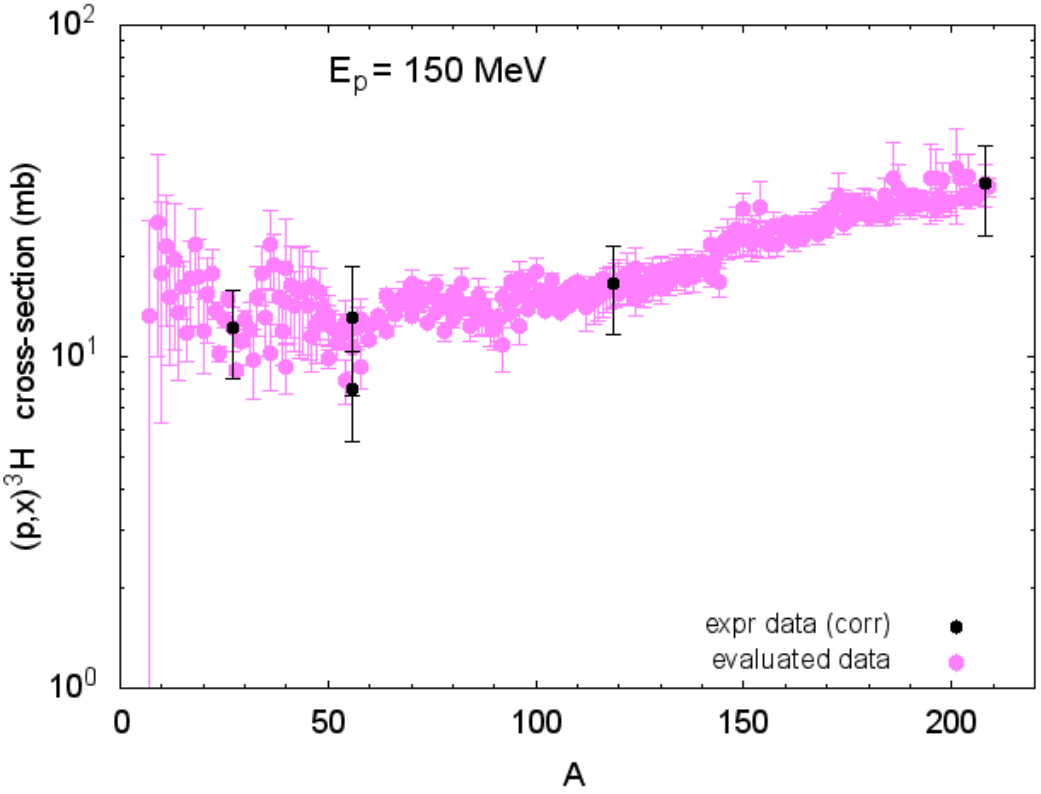

Fig.11 Evaluated triton production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 150 MeV.

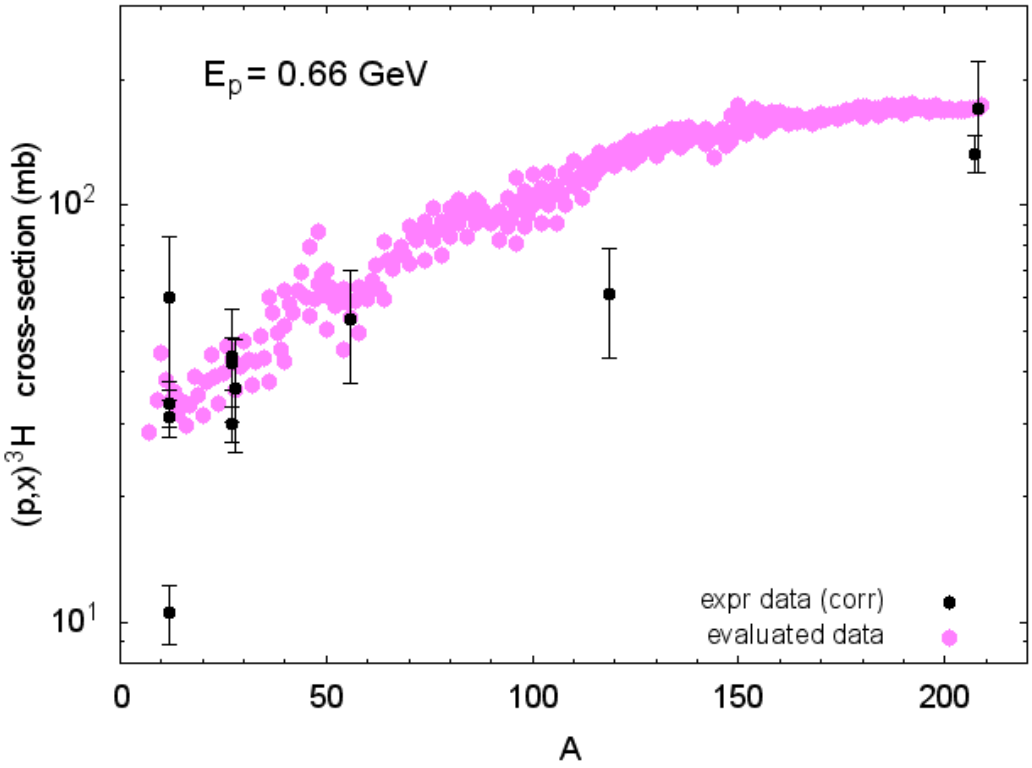

Fig.12 Evaluated triton production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 660 MeV.

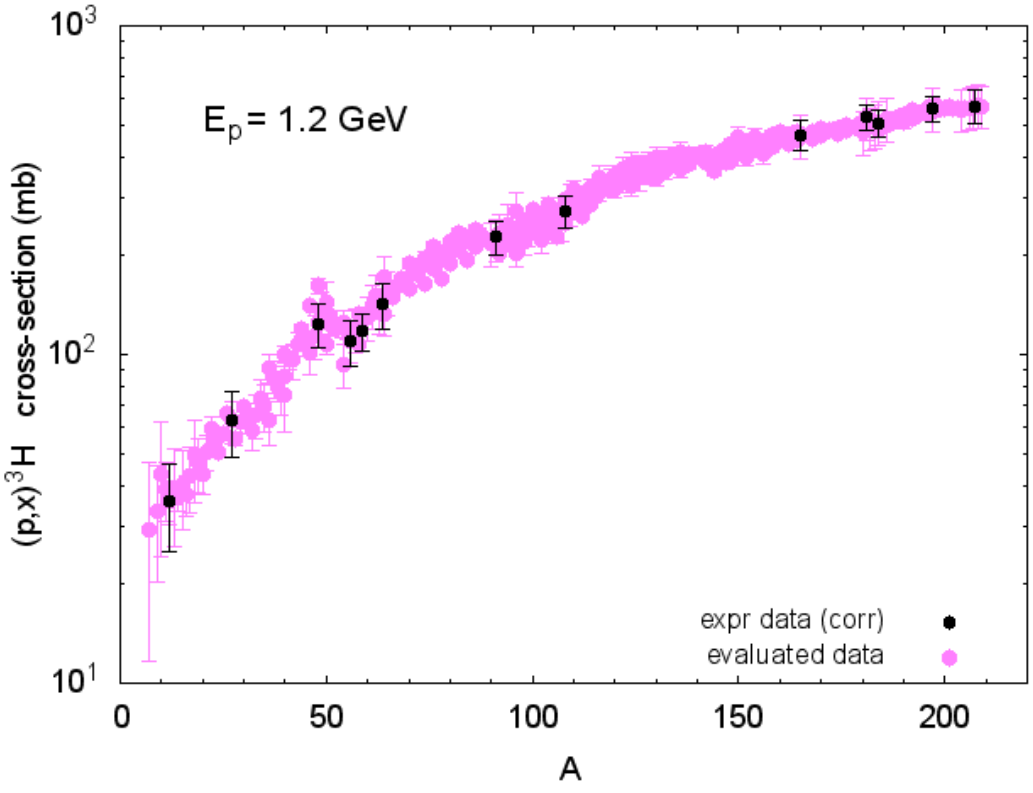

Fig.13 Evaluated triton production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 1200 MeV.

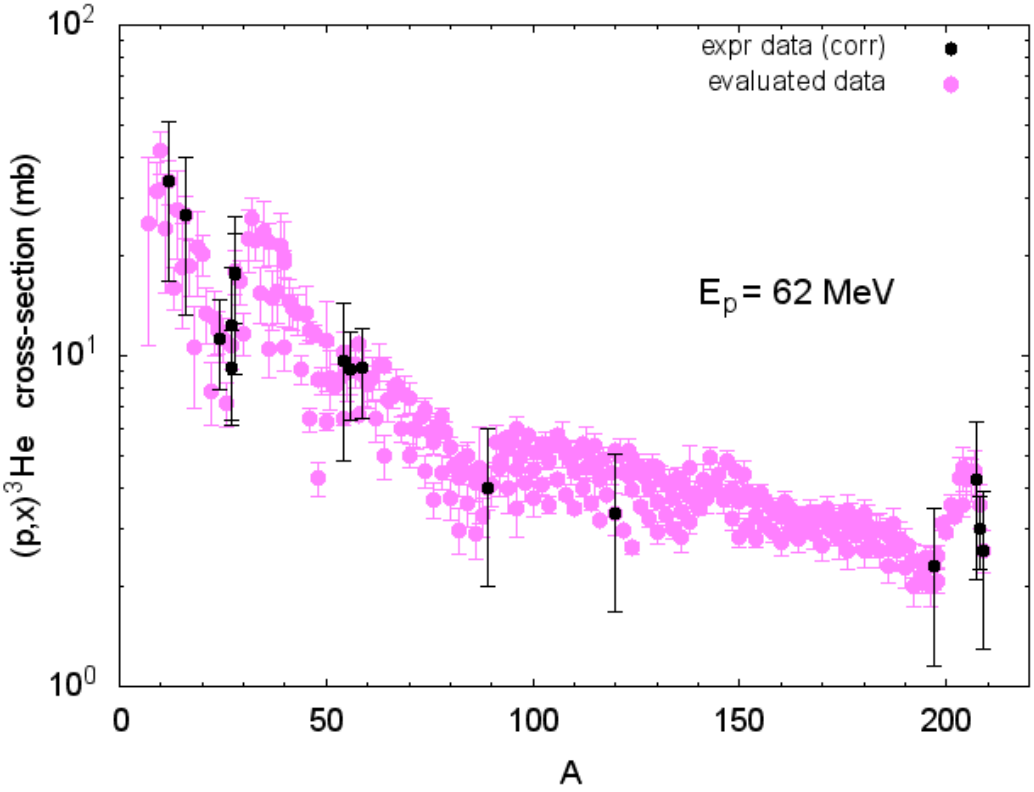

Fig.14 Evaluated ^{3}He- production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 62 MeV.

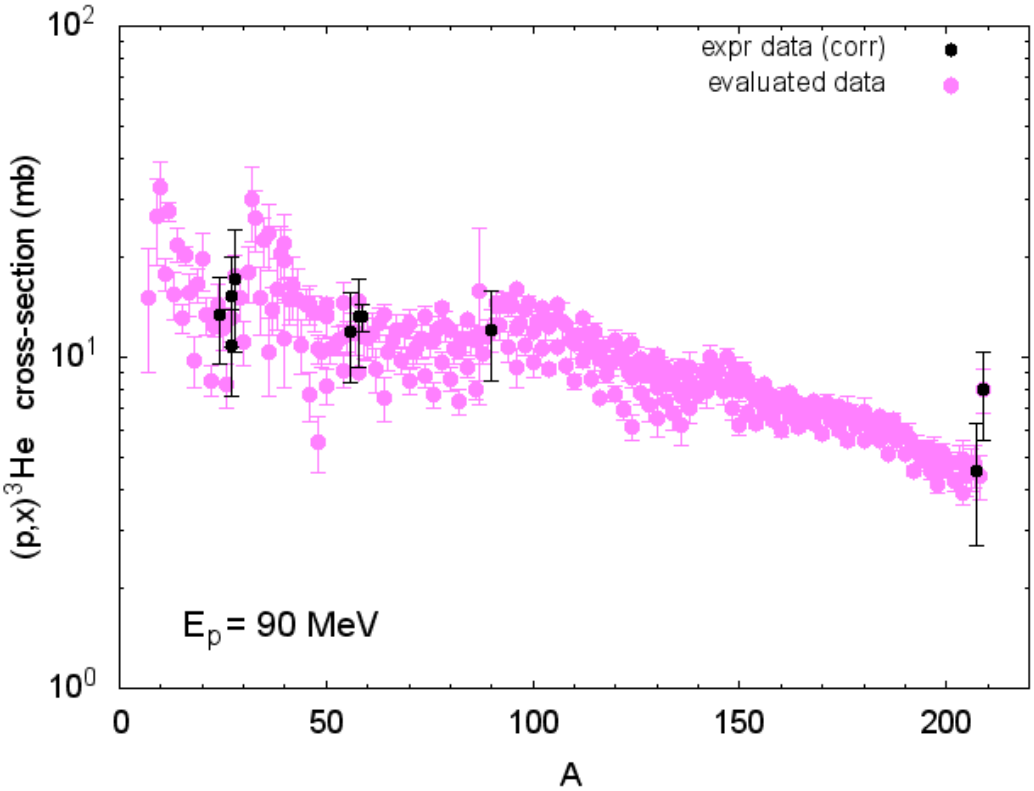

Fig.15 Evaluated ^{3}He- production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 90 MeV.

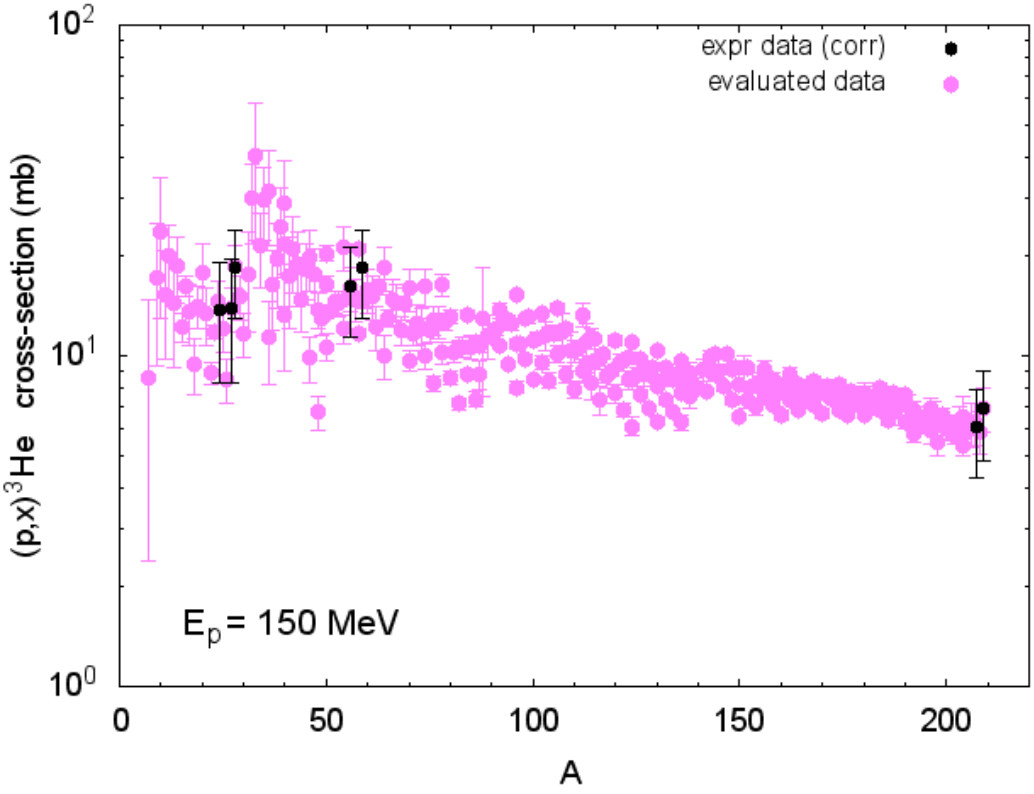

Fig.16 Evaluated ^{3}He- production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 150 MeV.

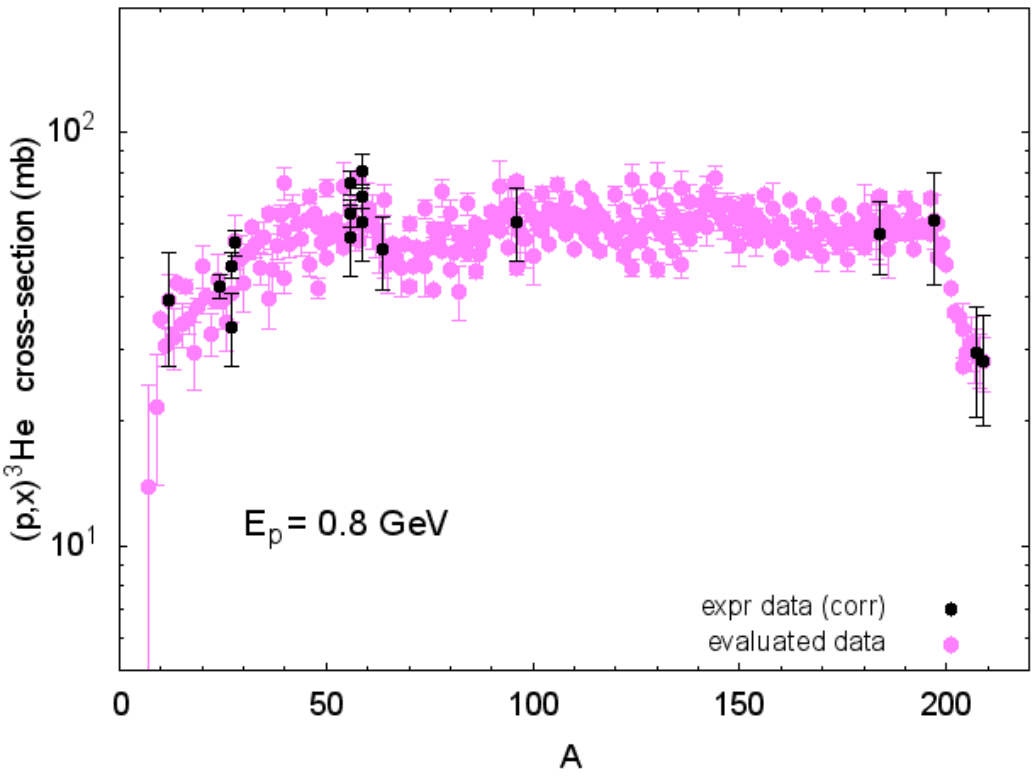

Fig.17 Evaluated ^{3}He- production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 800 MeV.

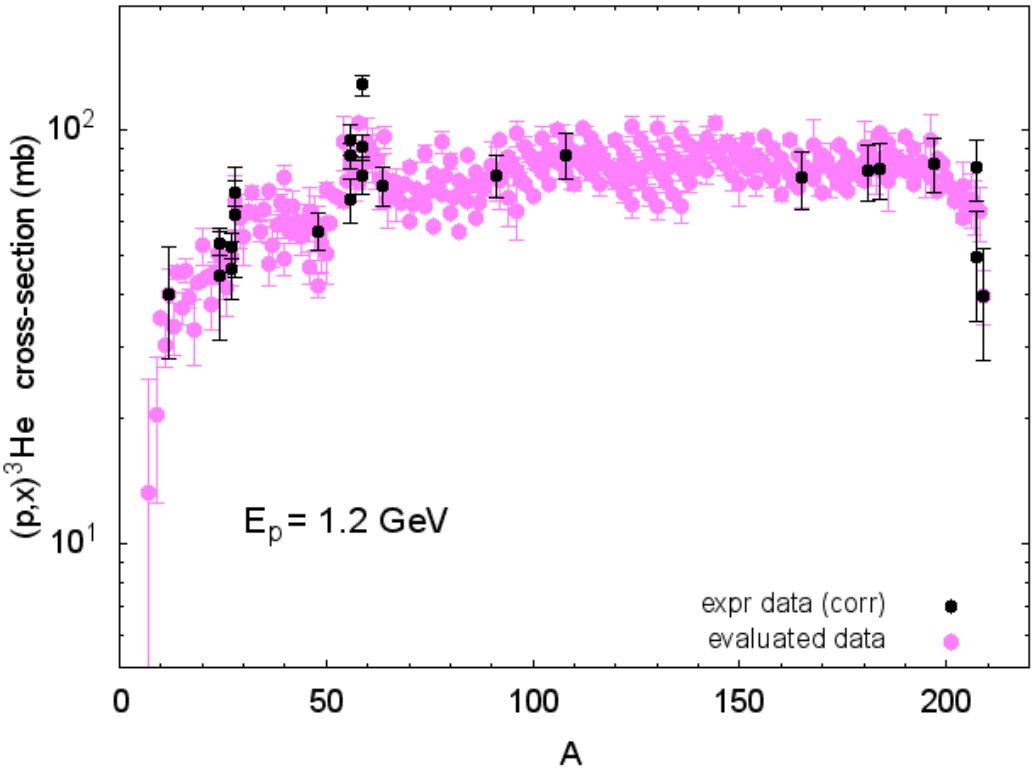

Fig.18 Evaluated ^{3}He- production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 1200 MeV.

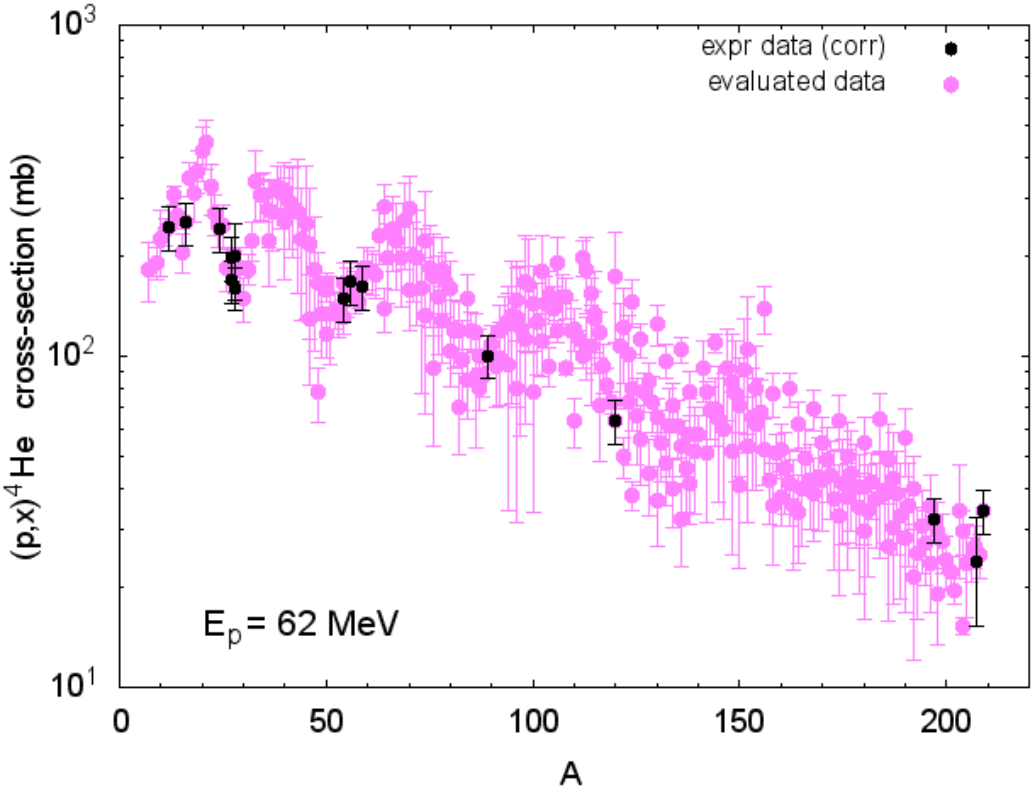

Fig.19 Evaluated α-particle production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 62 MeV.

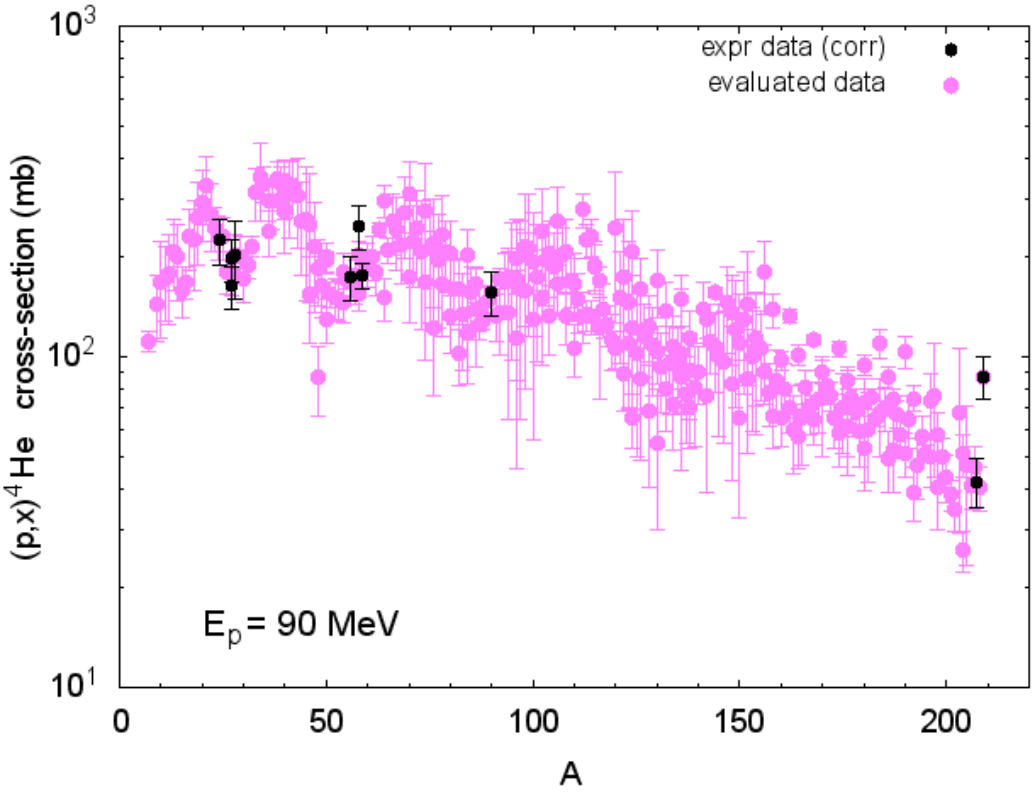

Fig.20 Evaluated α-particle production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 90 MeV.

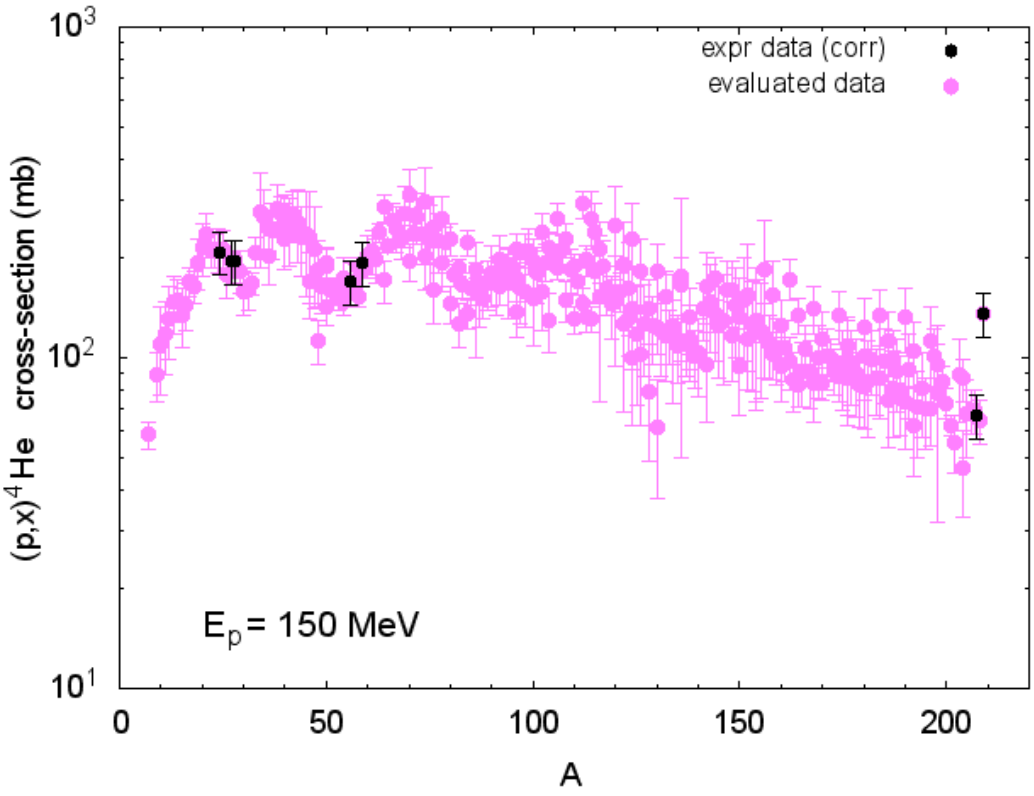

Fig.21 Evaluated α-particle production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 150 MeV.

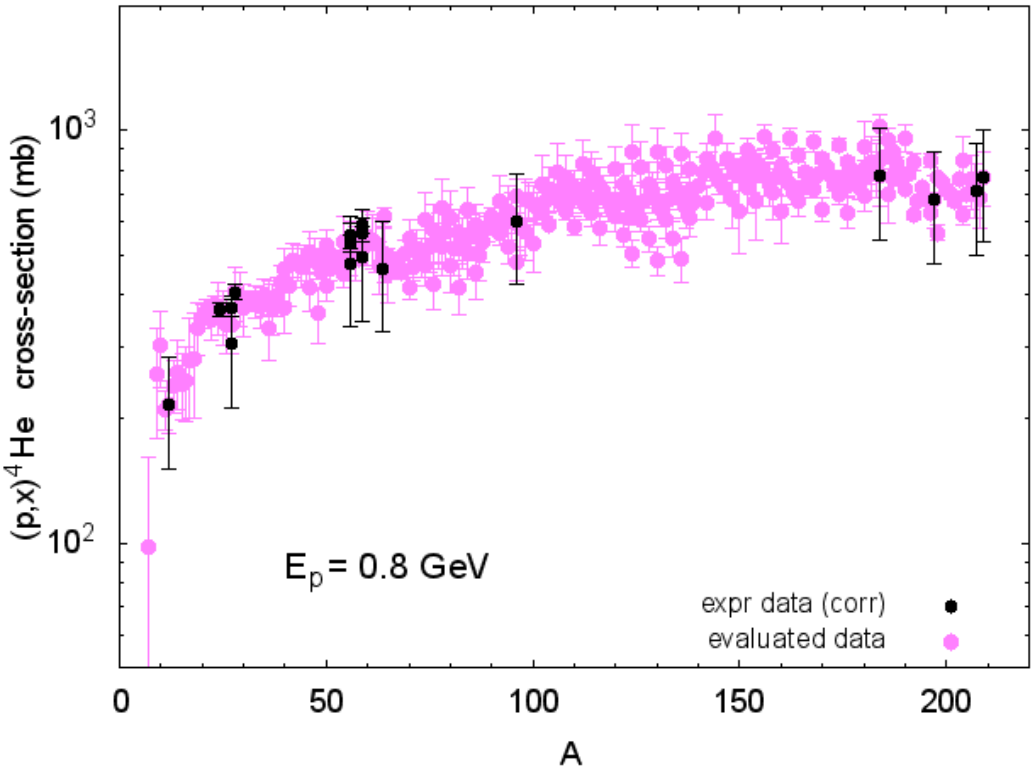

Fig.22 Evaluated α-particle production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 800 MeV.

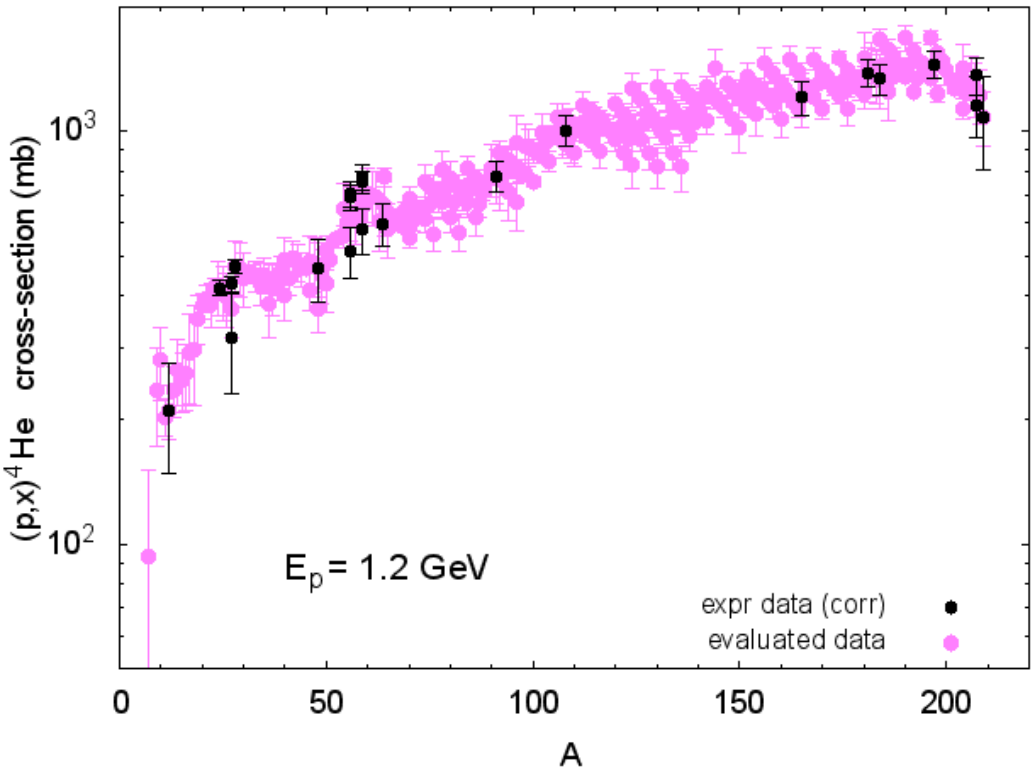

Fig.23 Evaluated α-particle production cross-sections for stable target nuclei from ^{7}Li to ^{209}Bi at the incident proton energy 1200 MeV.

6. Example of the use of obtained data for the evaluation of gas production cross-section for ^{9}Be

An example of the use of data obtained for the evaluation of gas production cross-sections for ^{9}Be at intermediate proton energies is discussed below.

Fig. 24 shows the cross-sections for deuteron, triton, ^{3}He, and α-particle production in ^{9}Be(p,x) reactions available in ENDF/B-VII [44], TENDL-2012 [45], results of calculations performed using CASCADE and CEM03, and the data obtained in the present work for a number of incident proton energies.

The difference between evaluated data and results of various calculations is typical for reactions, where experimental data are not available.

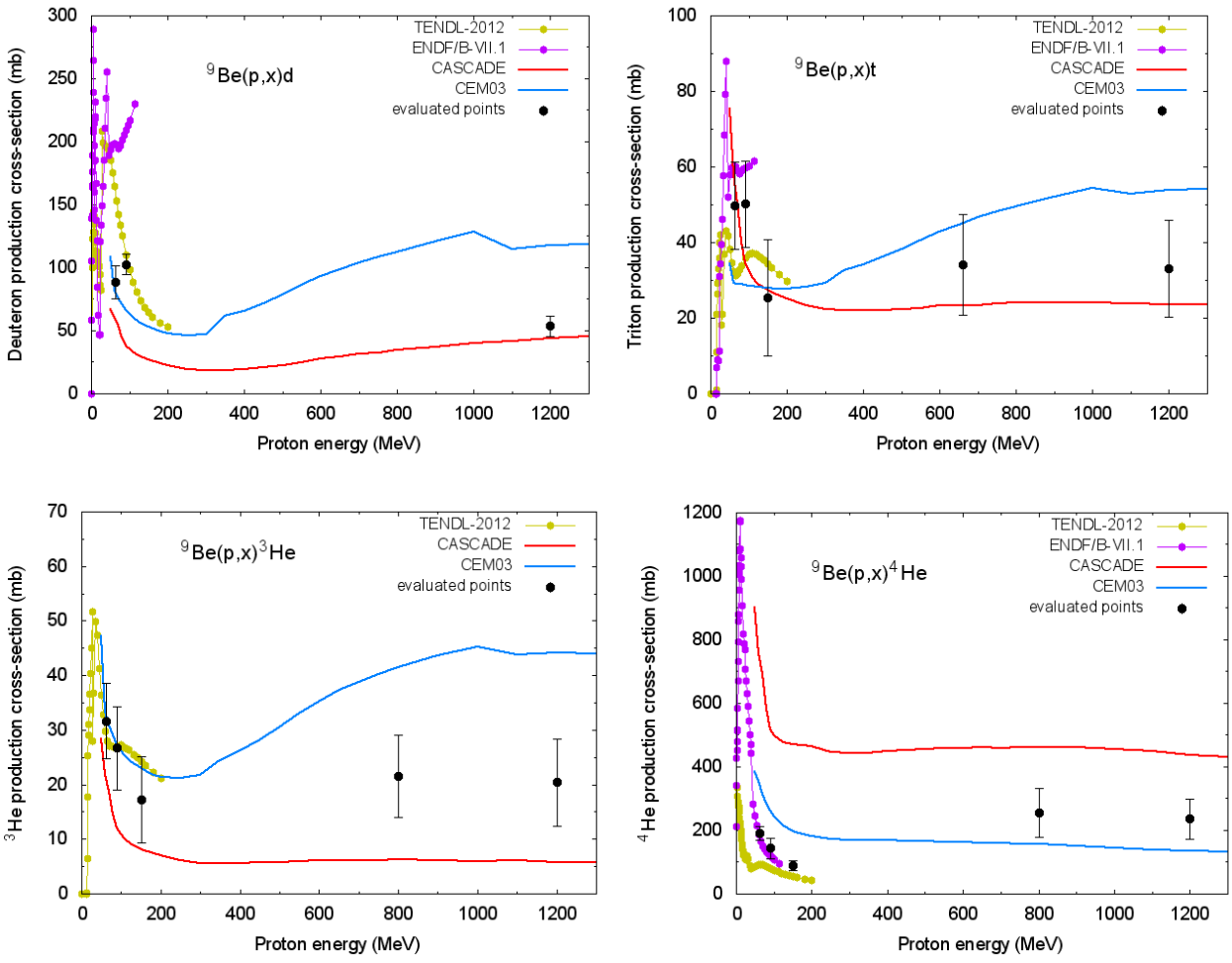

Fig.24 Deuteron-, triton-, ^{3}He, and α-particle production cross-sections for p+^{9}Be reactions from ENDF/B-VII.1 and TENDL-2012, cross-sections calculated using intranuclear evaporation model, and data obtained in the present work ("evaluated points")

Data obtained simplify a new evaluation of gas production cross-sections at considered energies indicating the possible energy trend and absolute values of evaluated cross-sections. Results of evaluations are shown for reactions with ^{9}Be in Fig.25. Final evaluated data presented in Fig.25 include deuteron production cross-sections from ENDF/B-VII.1 below incident proton energy 45 MeV, triton production cross-sections from ENDF/B-VII.1 below 40 MeV, ^{3}He production cross-section from TENDL-2012 below 50 MeV, and α-particle production cross-sections from ENDF/B-VII.1 below the proton energy 60 MeV.

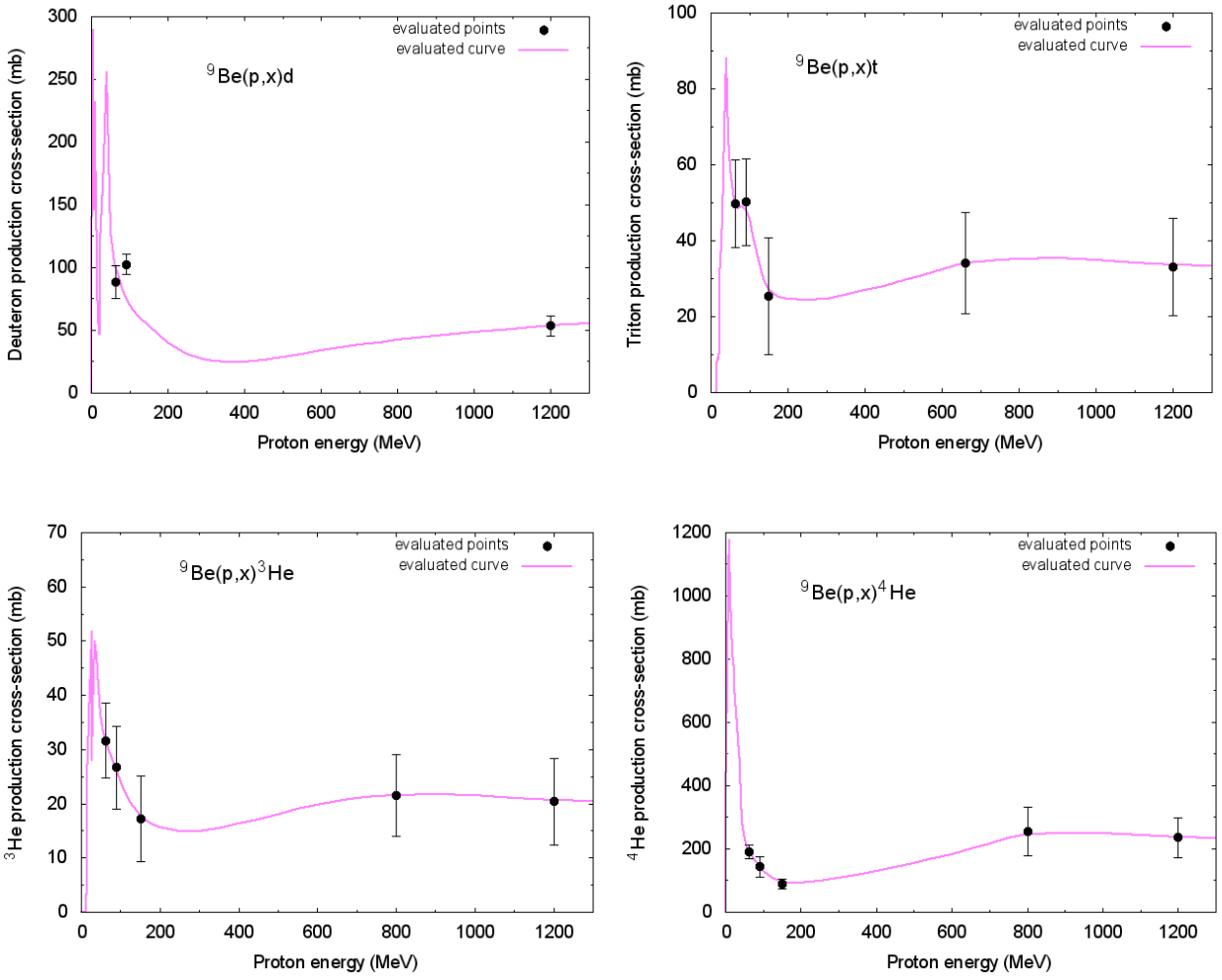

Fig.25 Evaluated deuteron-, triton-, ^{3}He, and α-particle production cross-sections for p+^{9}Be reactions. See details in the text.

7. Conclusion

Proton-, deuteron-, triton-, ^{3}He, and α-particle production cross-sections were evaluated for proton induced reaction for 278 stable target nuclei from ^{7}Li to ^{209}Bi using available experimental data and results of model calculations. The data were obtained for the number of incident proton energies from 62 to 1200 MeV. The choice of the proton energies depends on the amount of measurements available for each reaction considered.

Obtained cross-sections are shown in Figs.3-23 and in Figures of Appendix D. Numerical values are given in Appendix E.

Data obtained can be used for the evaluation of gas production cross-sections at intermediate energies. The example of the use of the data is given in Section 6.

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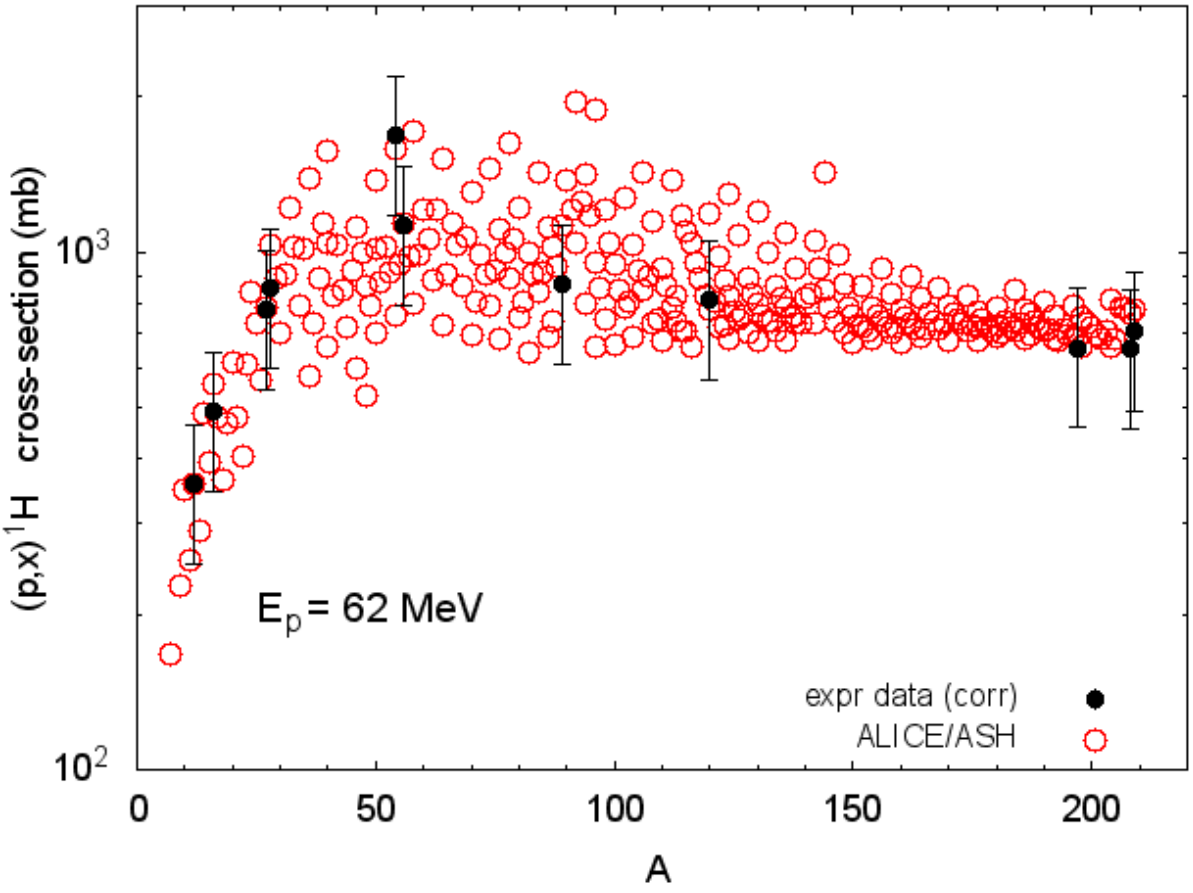
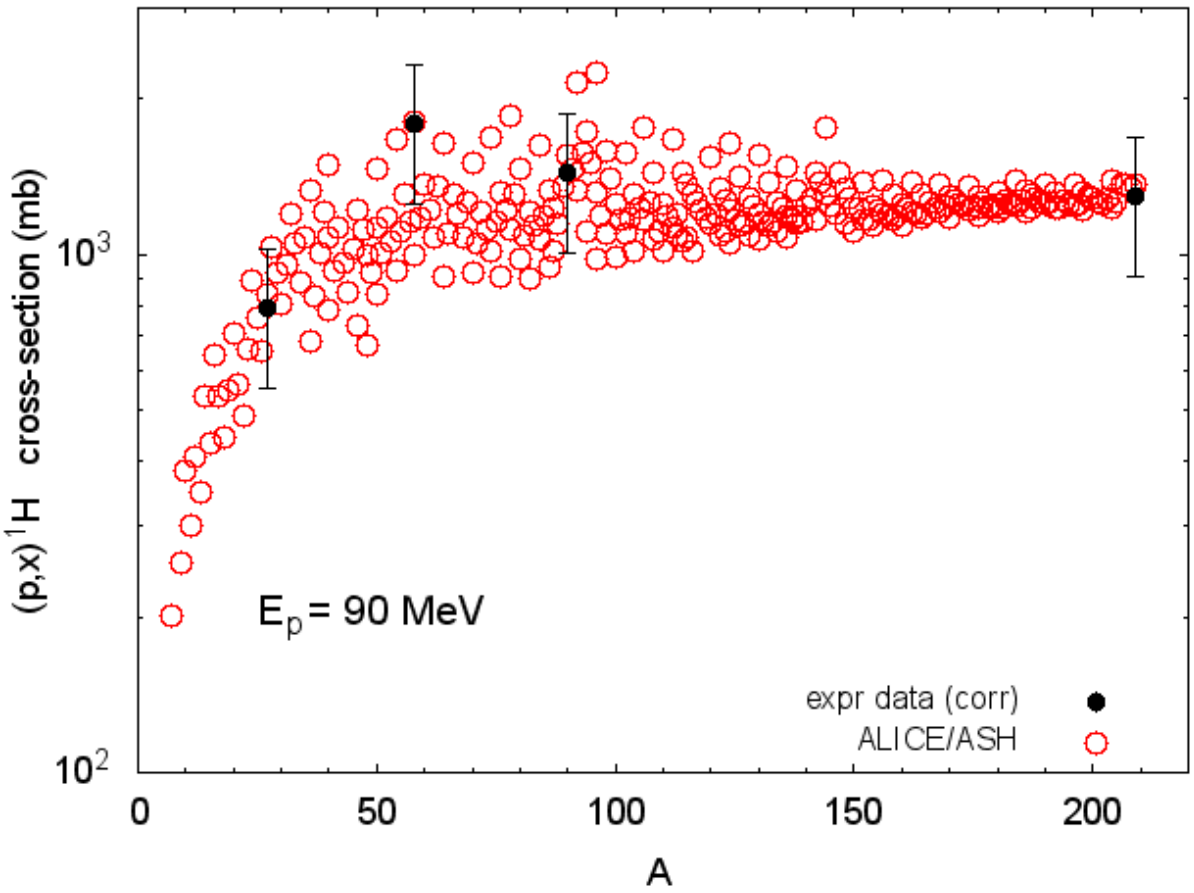
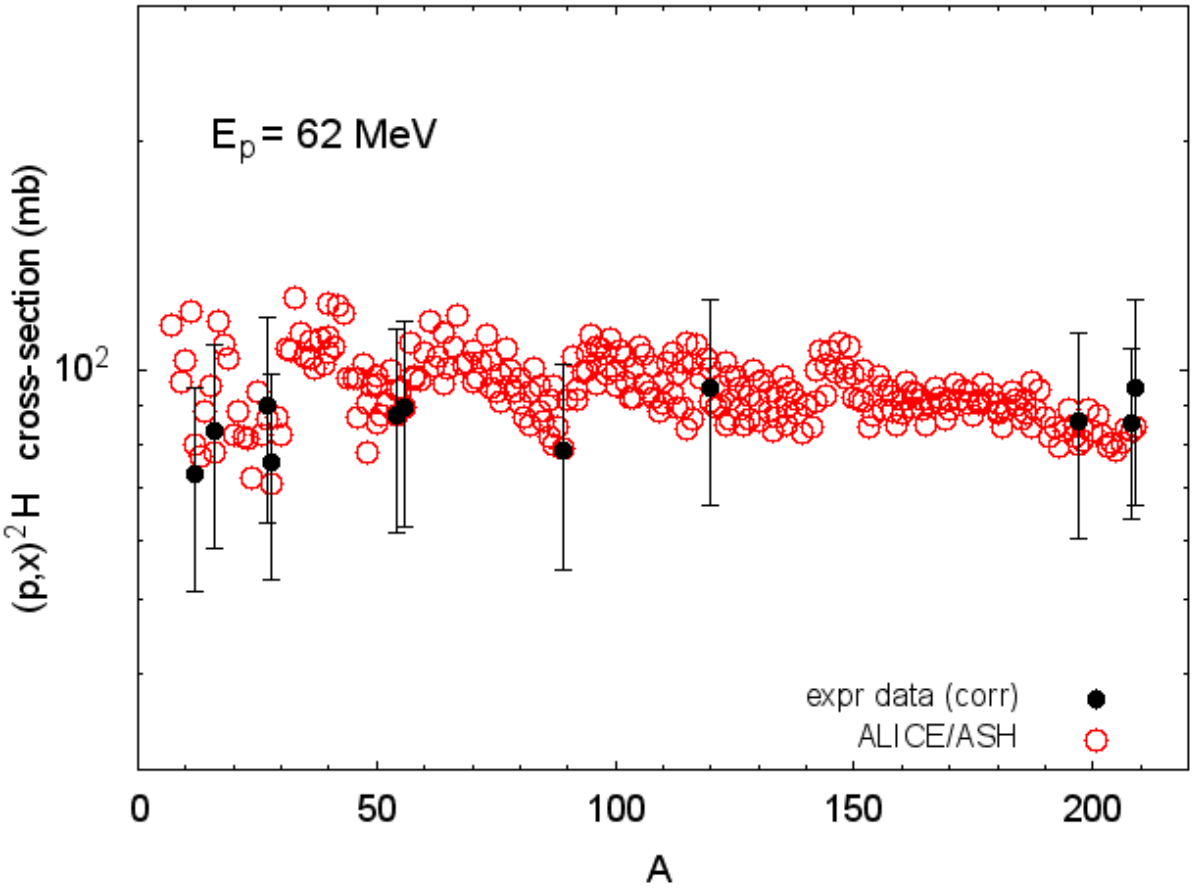
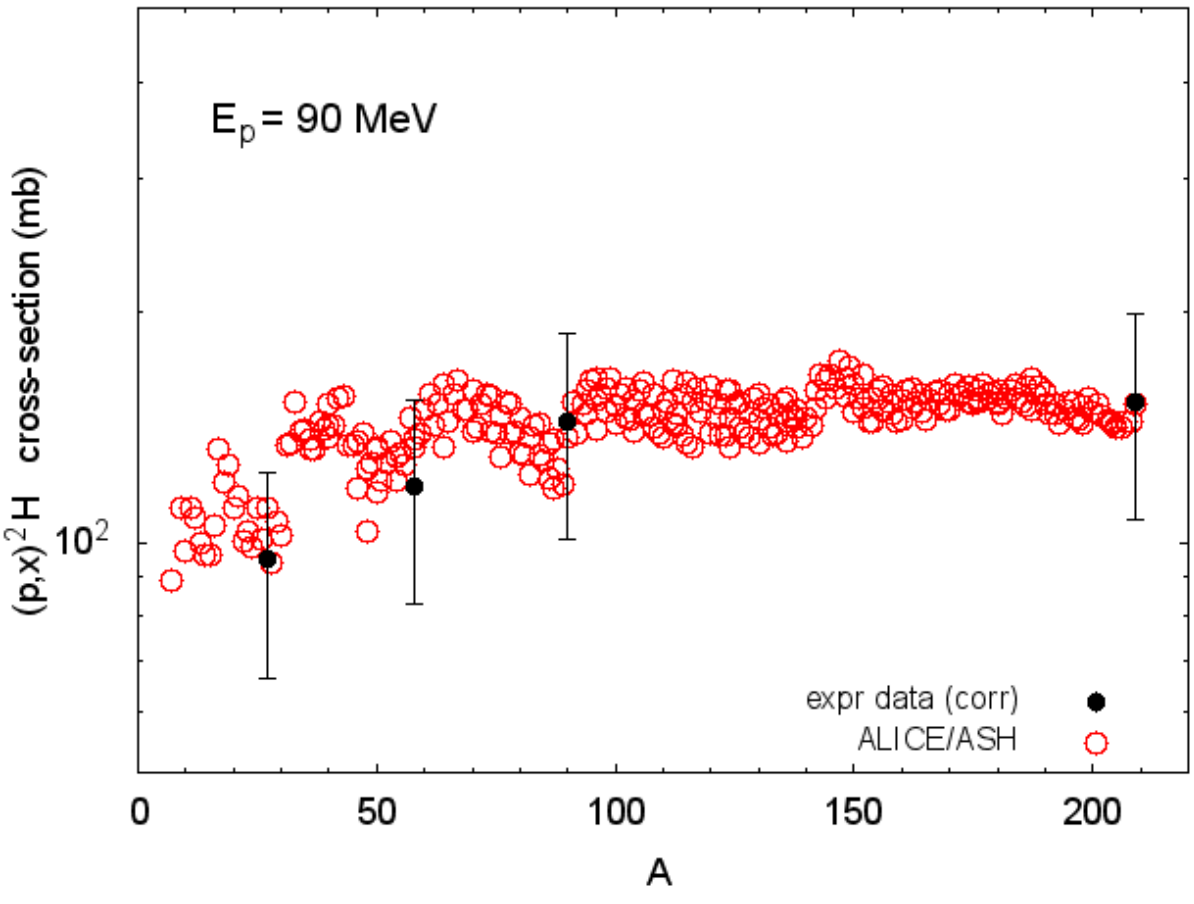
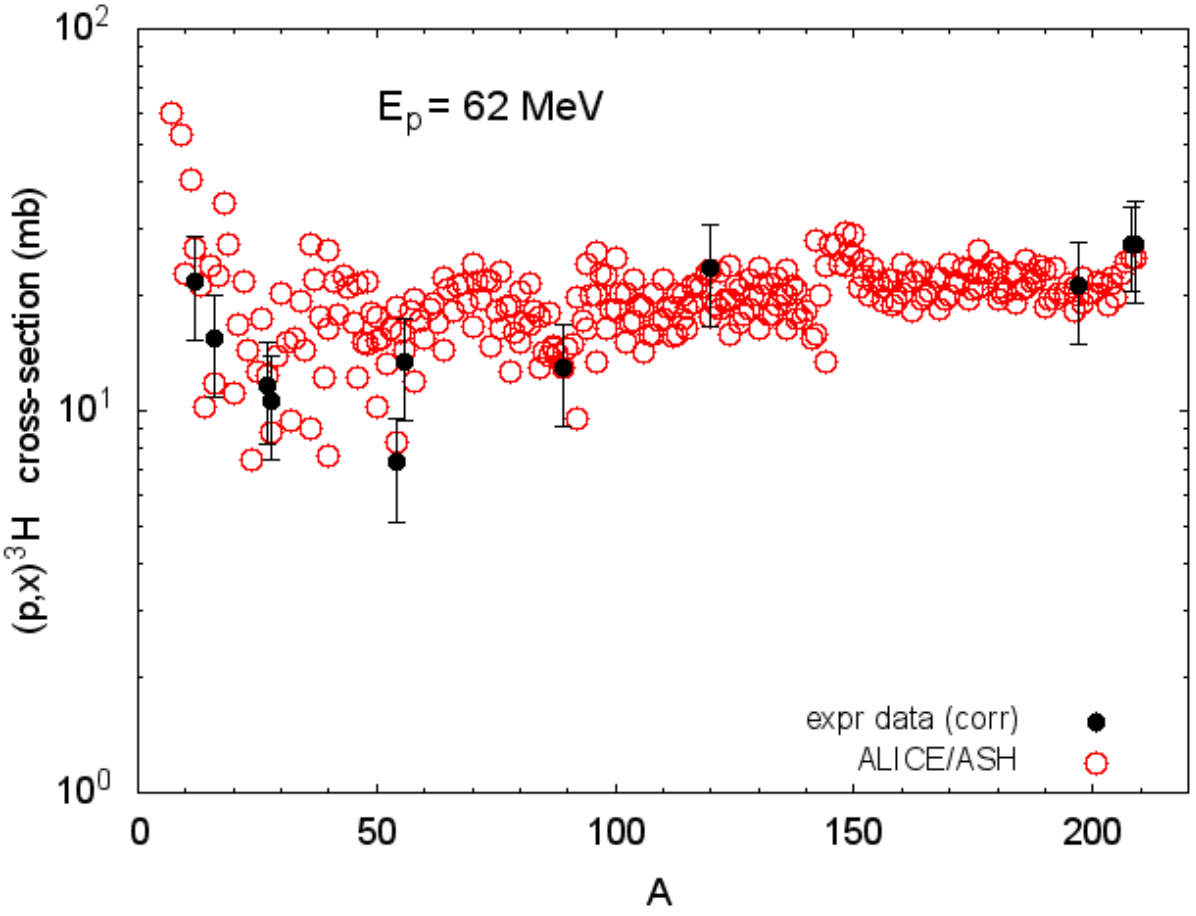
Appendix A: Figures: proton-, deuteron-, triton-, ^{3}He-, and α-particle-production cross-sections calculated using the ALICE/ASH code and experimental data

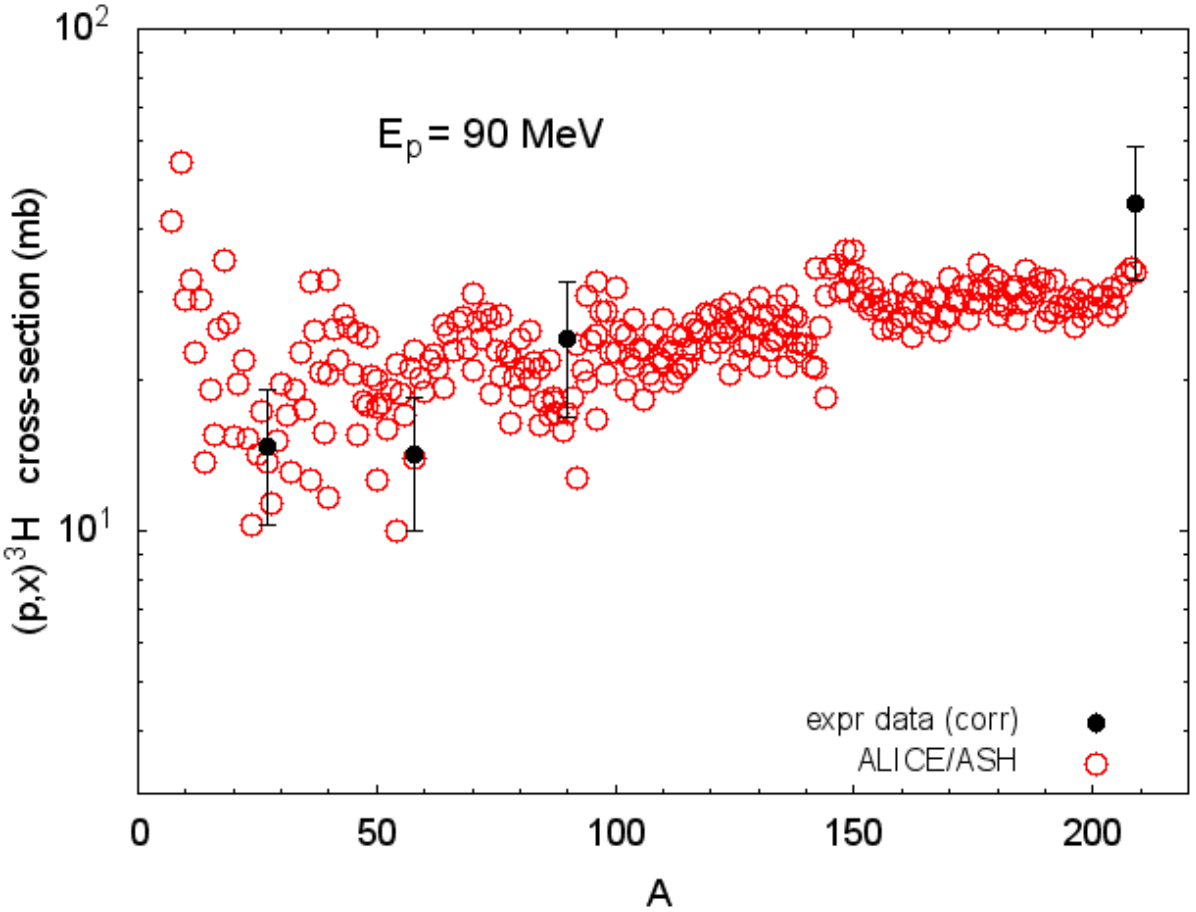

(p,x)^{1}H cross-section (mb)
10^3
10^2
E_p = 62 MeV
expr data (corr)
ALICE/ASH
0
50
100
150
200
A

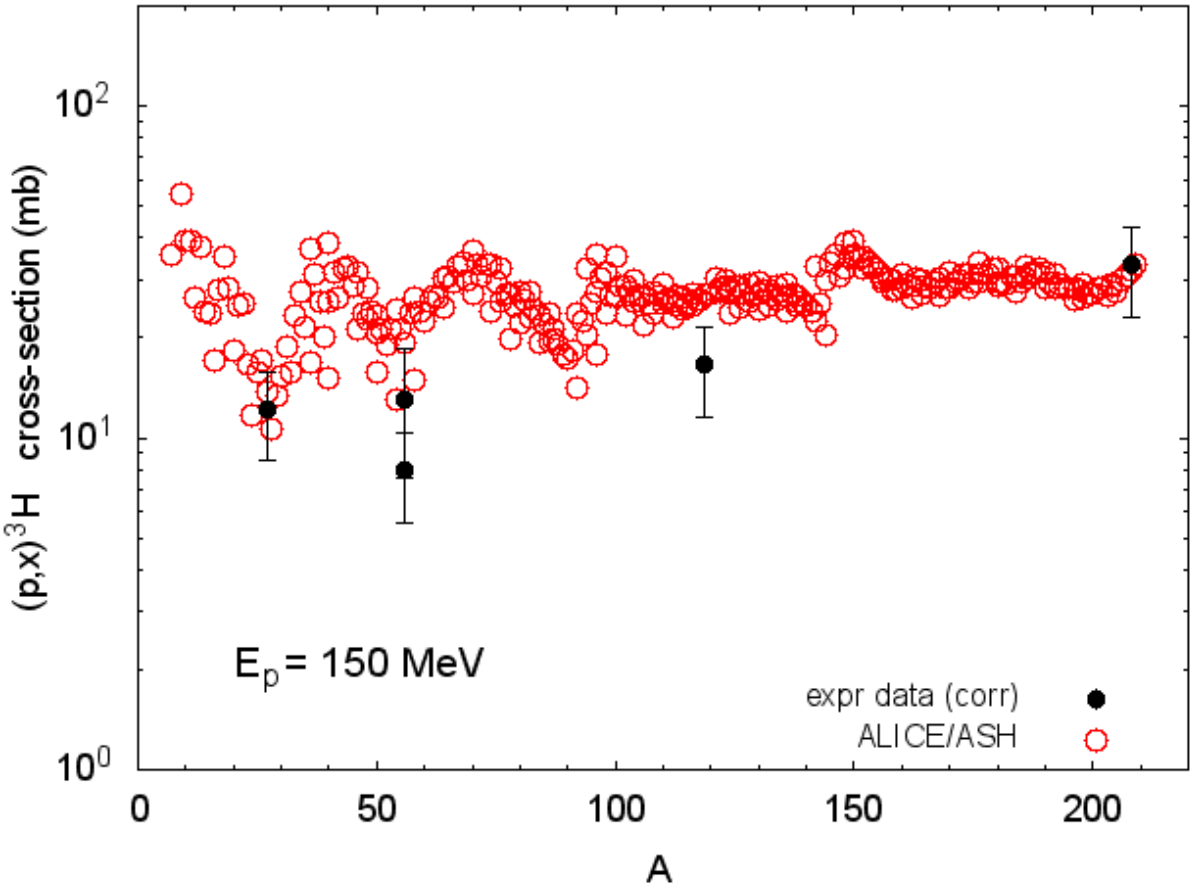

(p,x)^{1}H cross-section (mb)
10^3
10^2
E_p = 90 MeV
expr data (corr)
ALICE/ASH
0
50
100
150
200
A

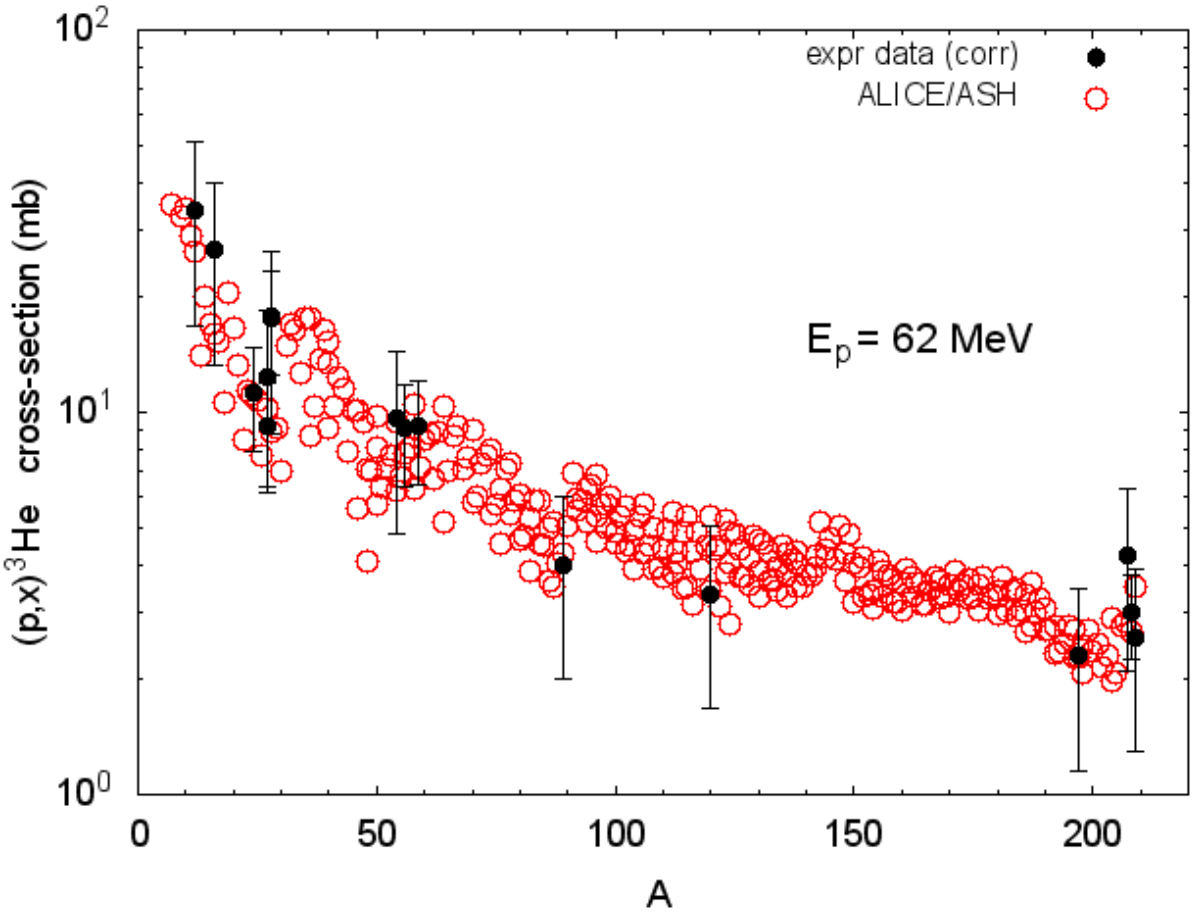

E_p = 62 MeV
$(p,x)^2H$ cross-section (mb)
10^2
expr data (corr)
ALICE/ASH
0
50
100
150
200
A

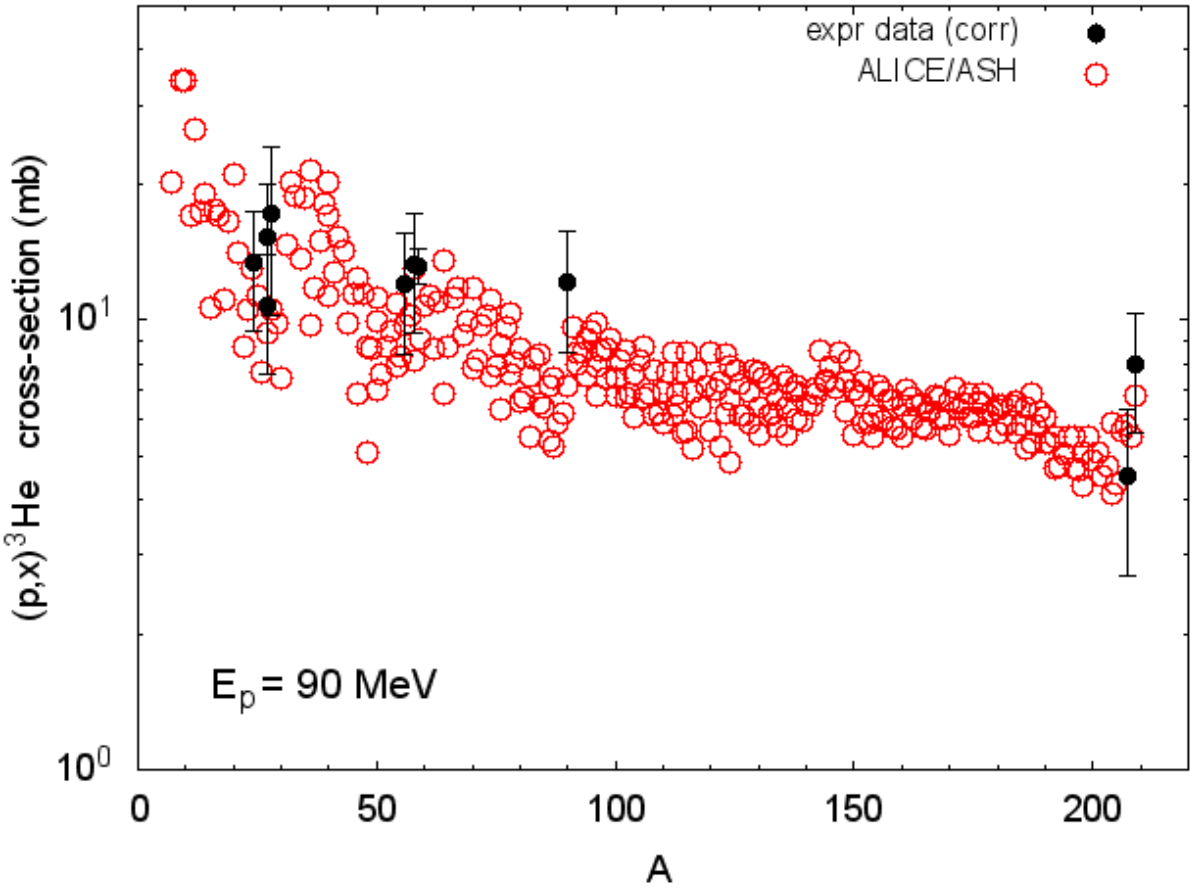

E_p = 90 MeV
$(p,x)^2H$ cross-section (mb)
10^2
expr data (corr)
ALICE/ASH
0
50
100
150
200
A

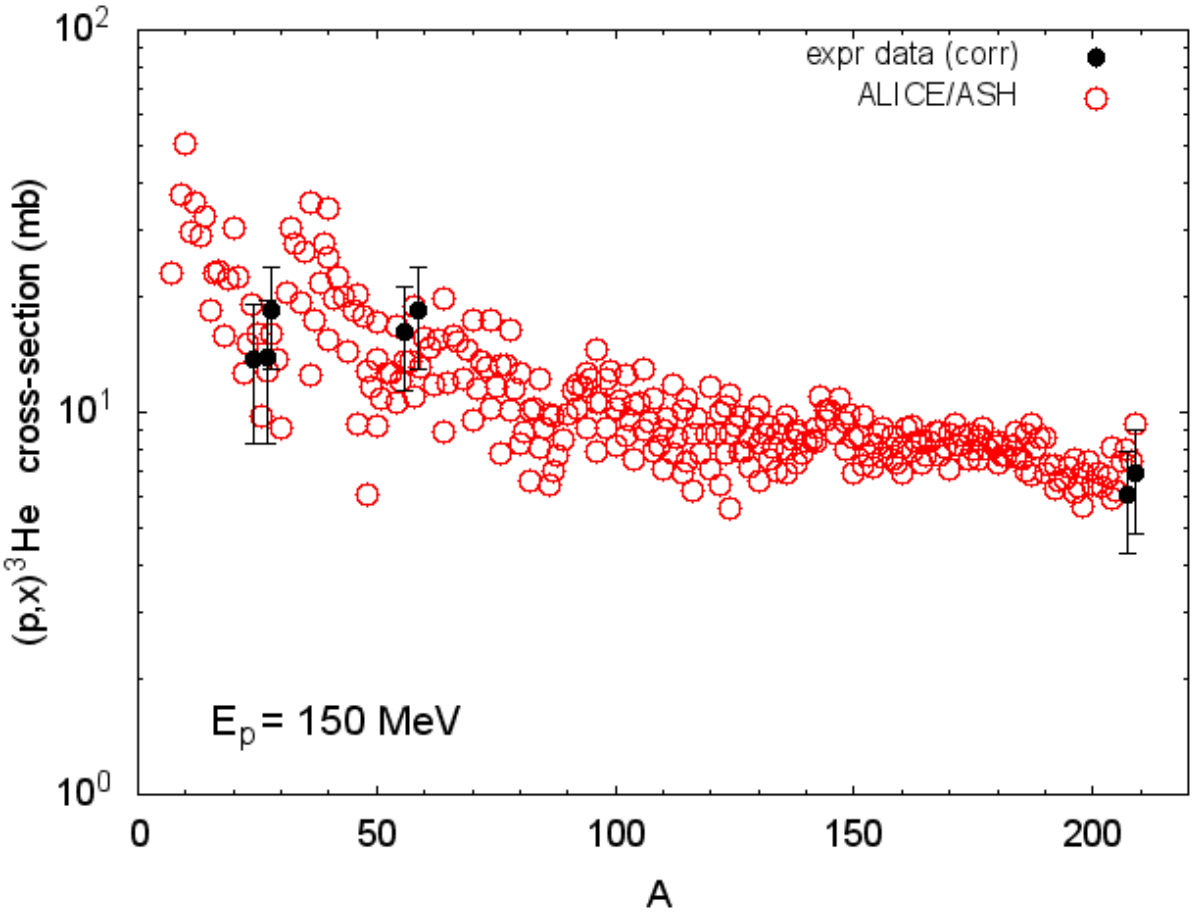

E_p = 62 MeV
$(p,x)^3H$ cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
expr data (corr)
ALICE/ASH

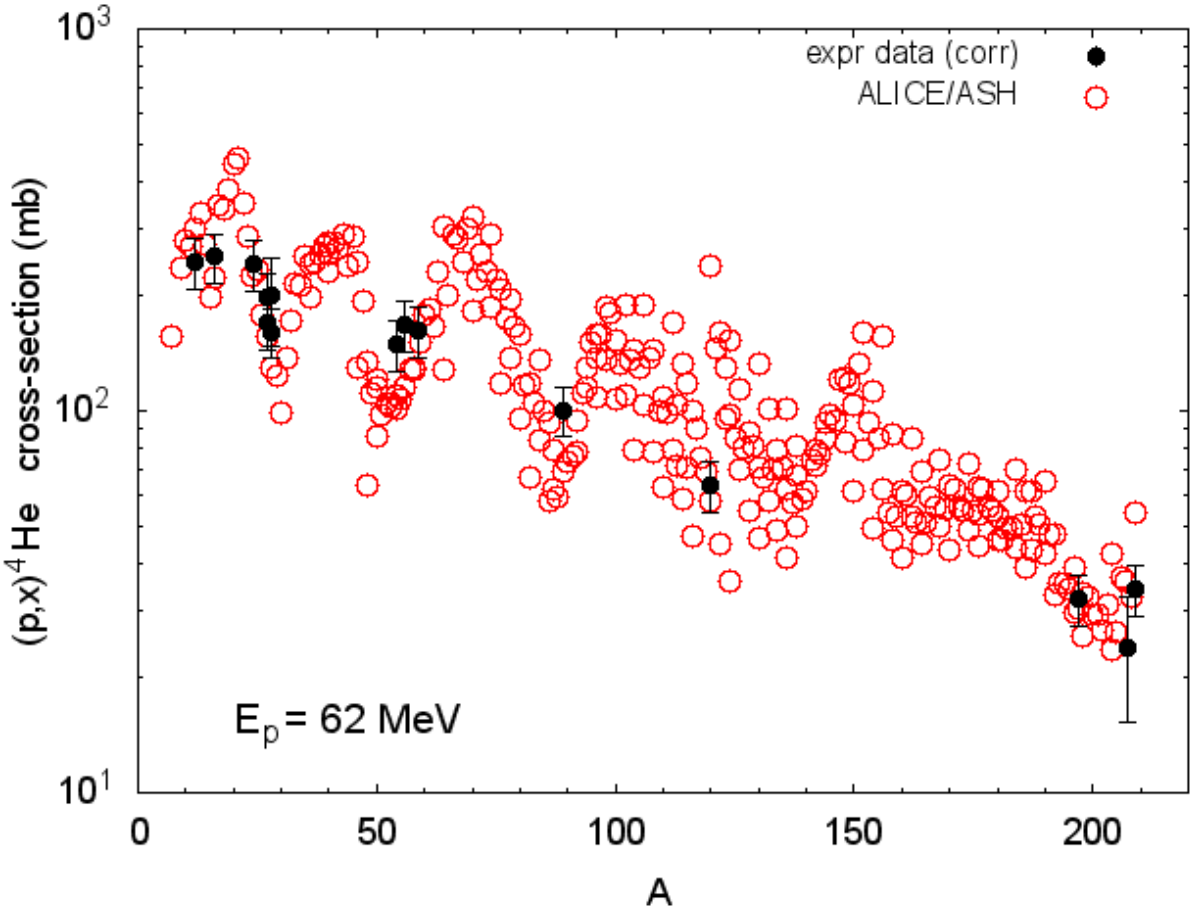

E_p = 90 MeV
$(p,x)^3H$ cross-section (mb)
10^2
10^1
0
50
100
150
200
A
expr data (corr)
ALICE/ASH

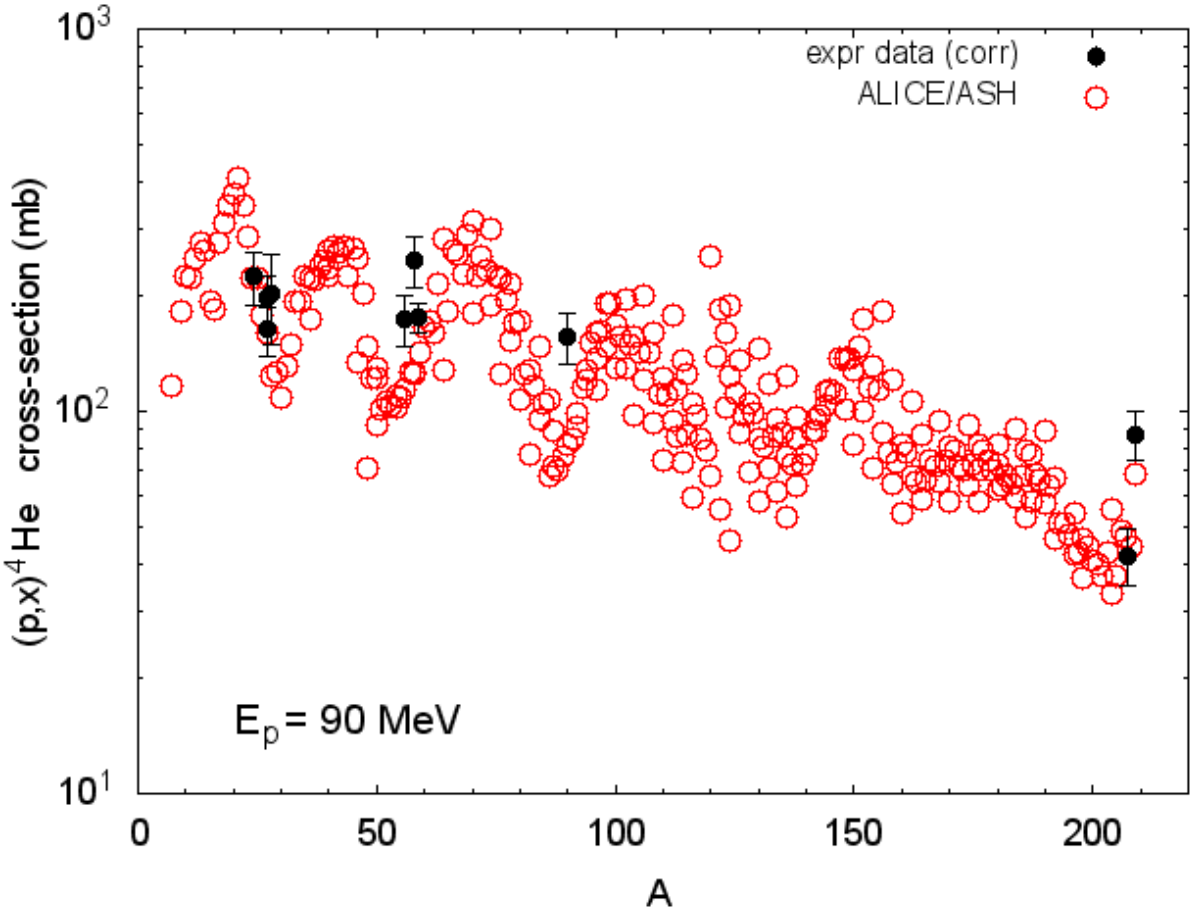

(p,x)3H cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
Ep = 150 MeV
expr data (corr)
ALICE/ASH

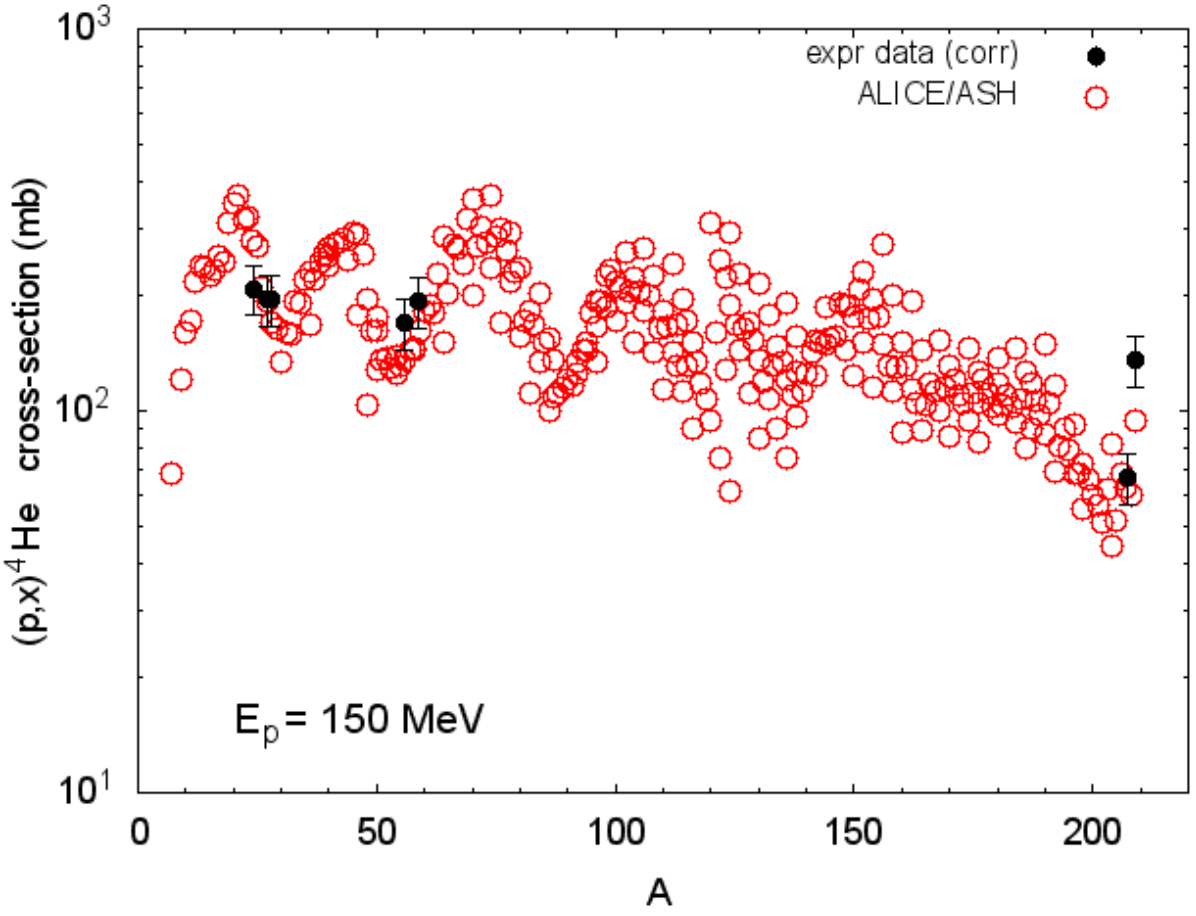

(p,x)3He cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
Ep = 62 MeV
expr data (corr)
ALICE/ASH


expr data (corr)
ALICE/ASH
(p,x)3He cross-section (mb)
10^1
10^0
E_p = 90 MeV
0
50
100
150
200
A

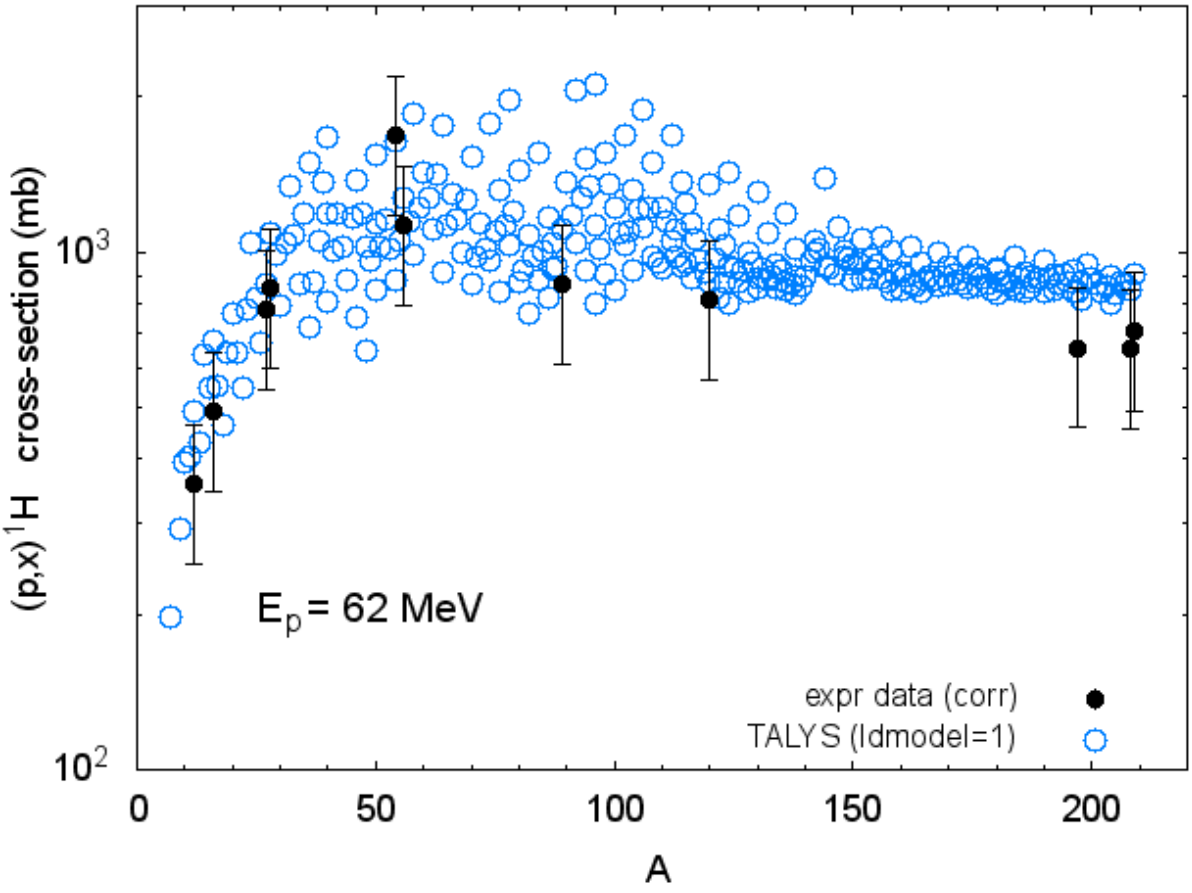

expr data (corr)
ALICE/ASH
(p,x)3He cross-section (mb)
10^2
10^1
10^0
E_p = 150 MeV
0
50
100
150
200
A

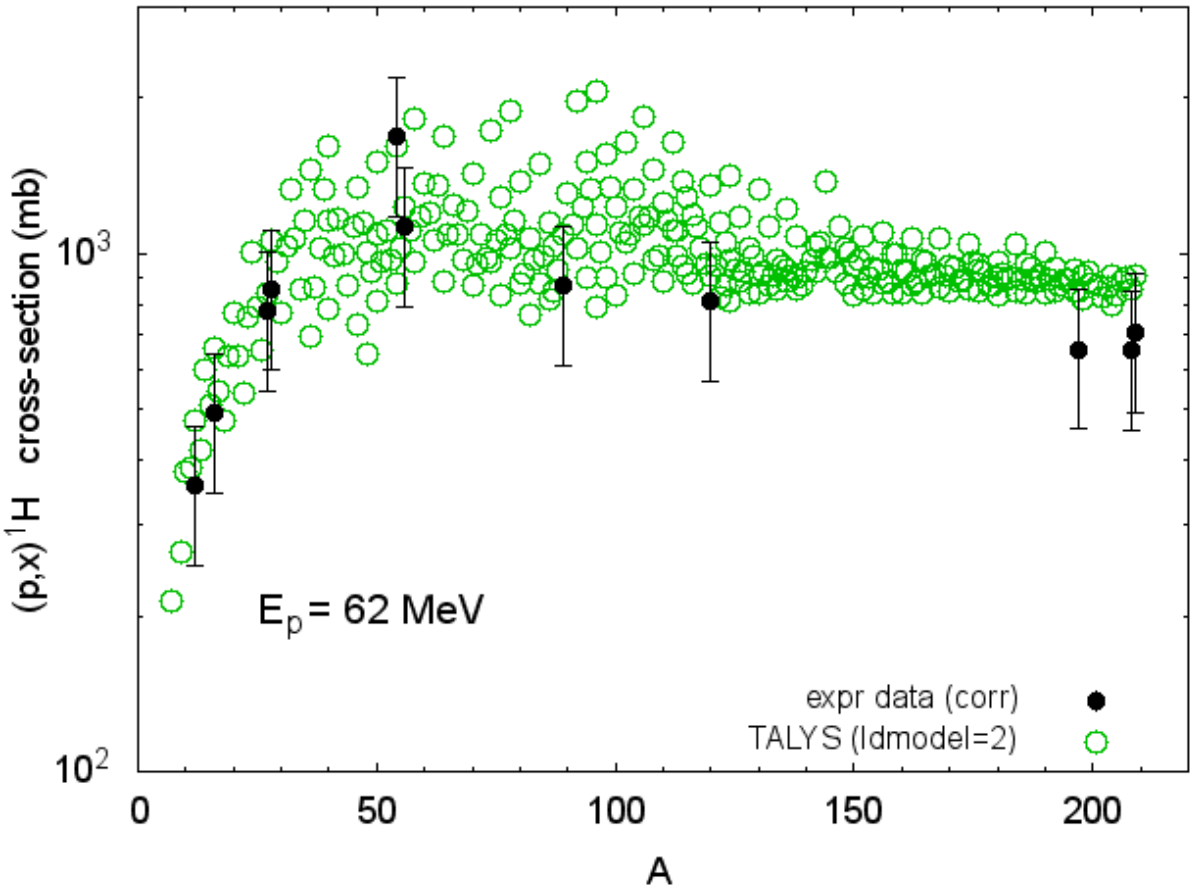

expr data (corr)
ALICE/ASH
10^3
10^2
10^1
(p,x)^{4}He cross-section (mb)
E_p = 62 MeV
0
50
100
150
200
A

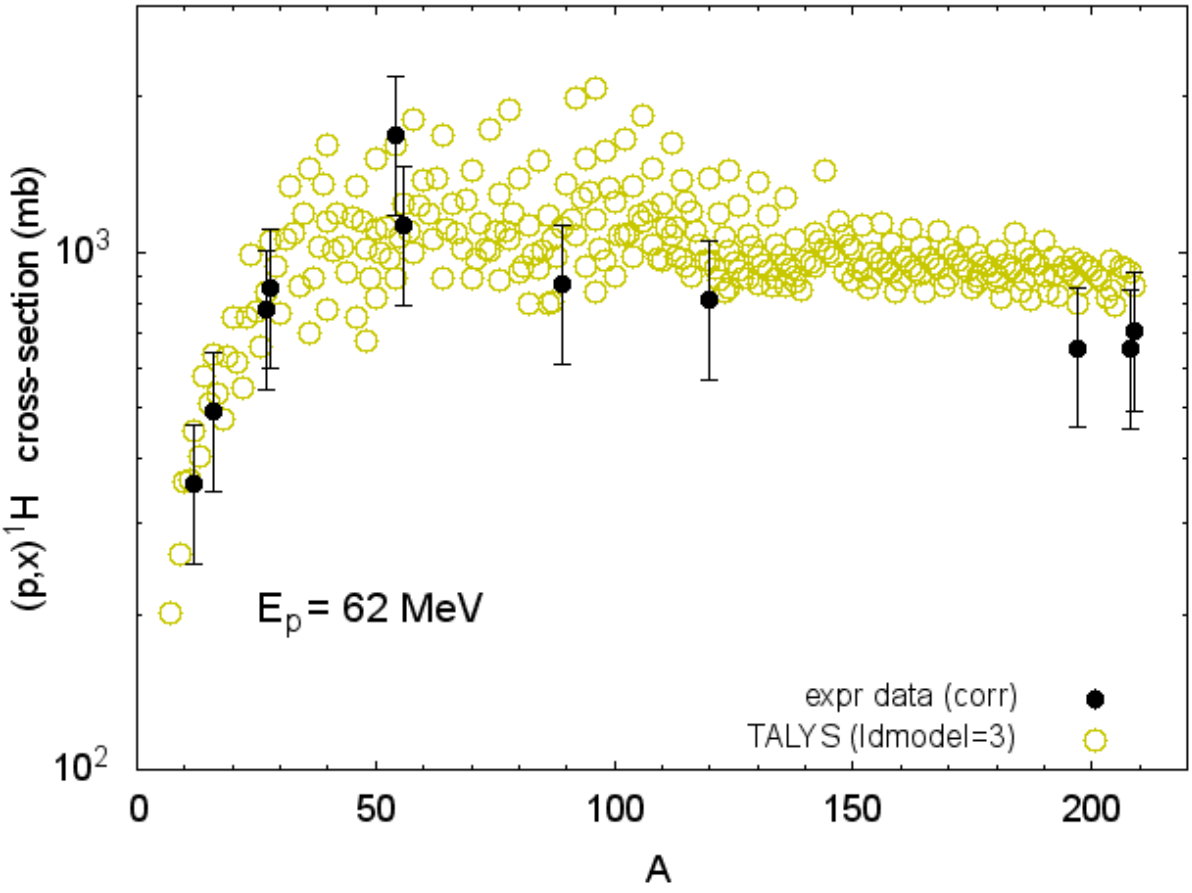

expr data (corr)
ALICE/ASH
10^3
10^2
10^1
(p,x)^{4}He cross-section (mb)
E_p = 90 MeV
0
50
100
150
200
A

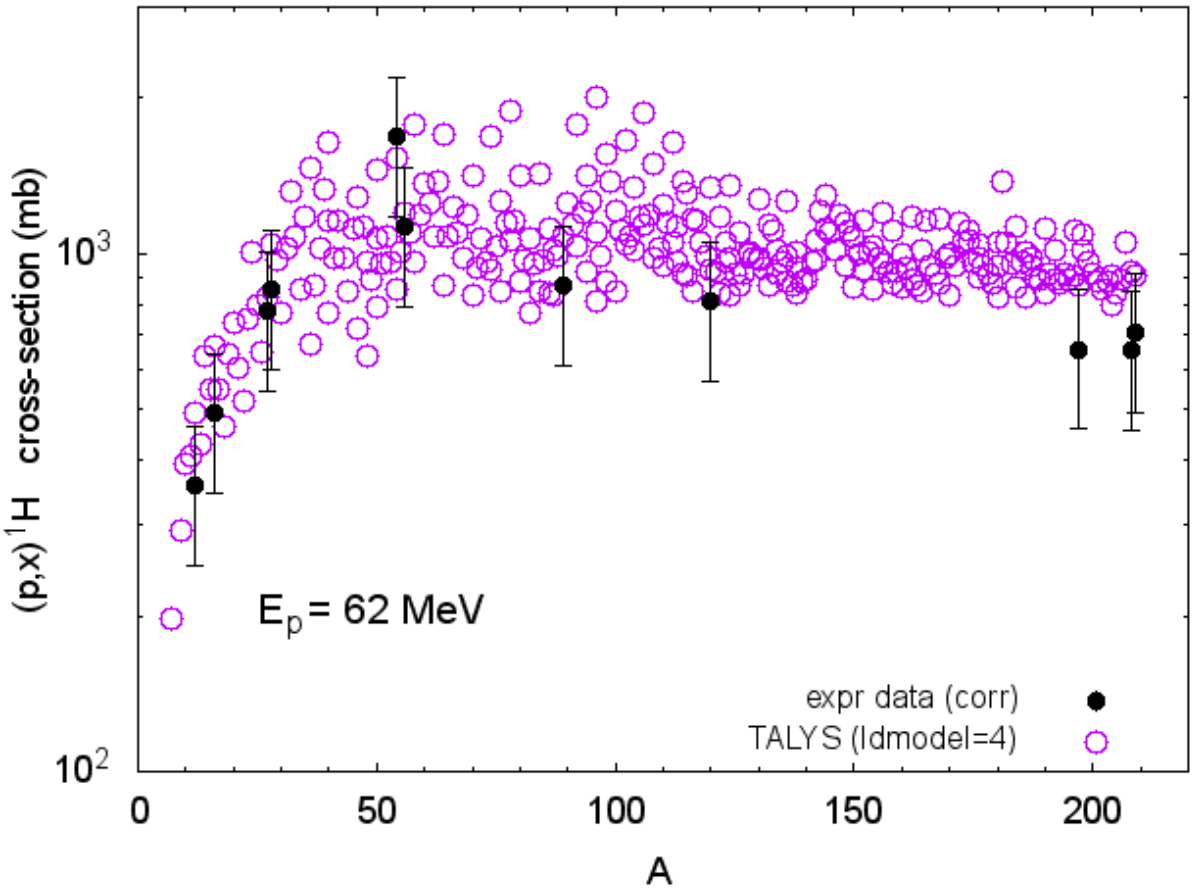

expr data (corr)
ALICE/ASH
E_p = 150 MeV
(p,x)^{4}He cross-section (mb)
A
10^3
10^2
10^1
0
50
100
150
200

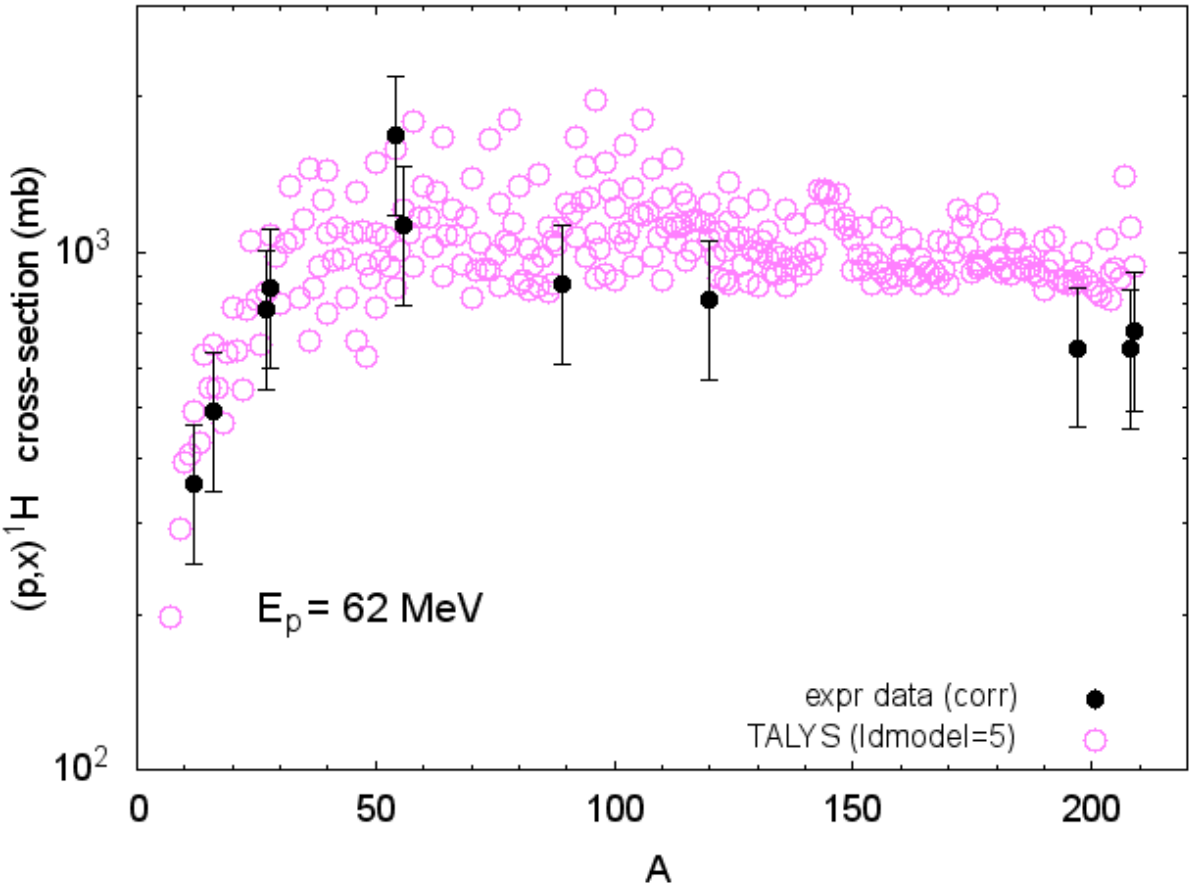
Appendix B: **Figures: proton-, deuteron-, triton-, ^{3}He-, and α-particle-production cross-sections calculated with the TALYS code using different models for the description of nuclear level density and experimental data**

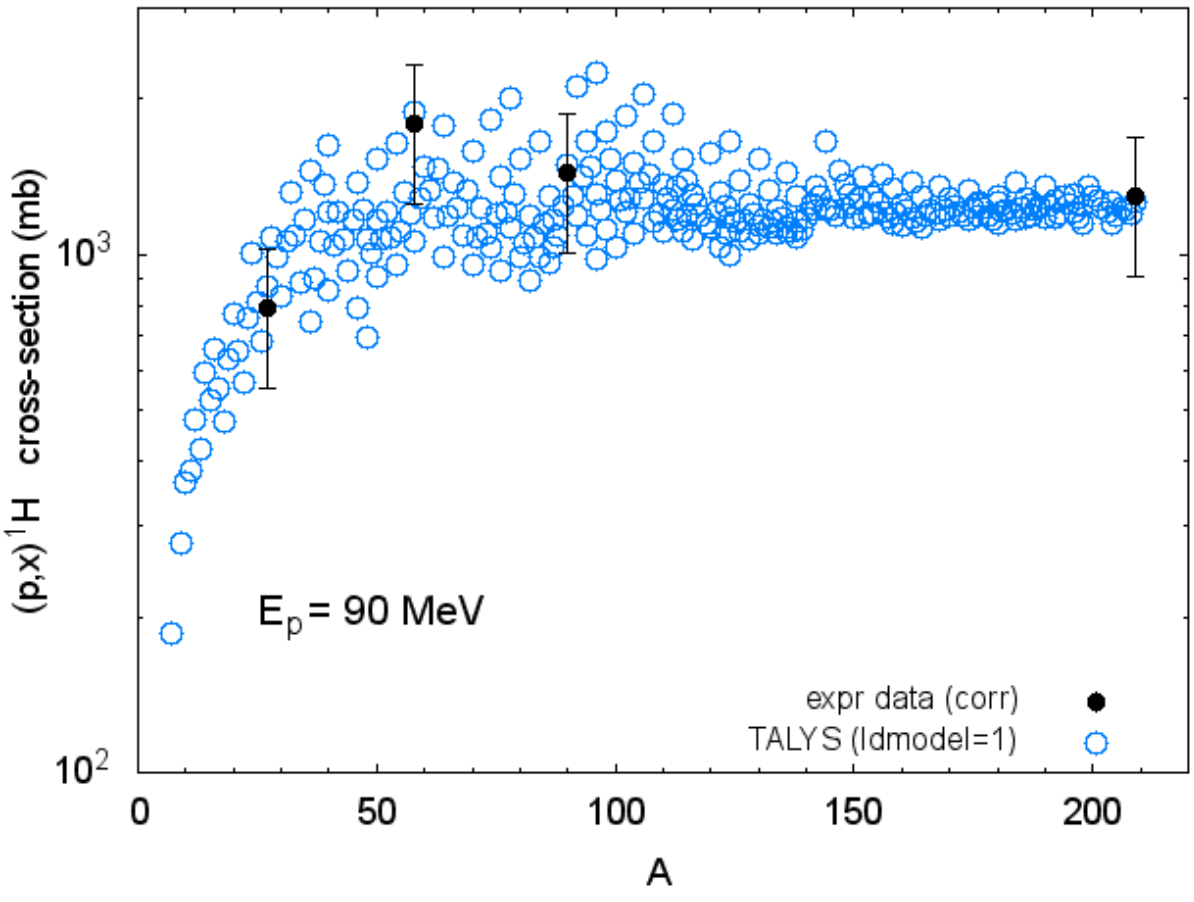

(p,x)1H cross-section (mb)
10^3
10^2
Ep = 62 MeV
expr data (corr)
TALYS (ldmodel=1)
0
50
100
150
200
A

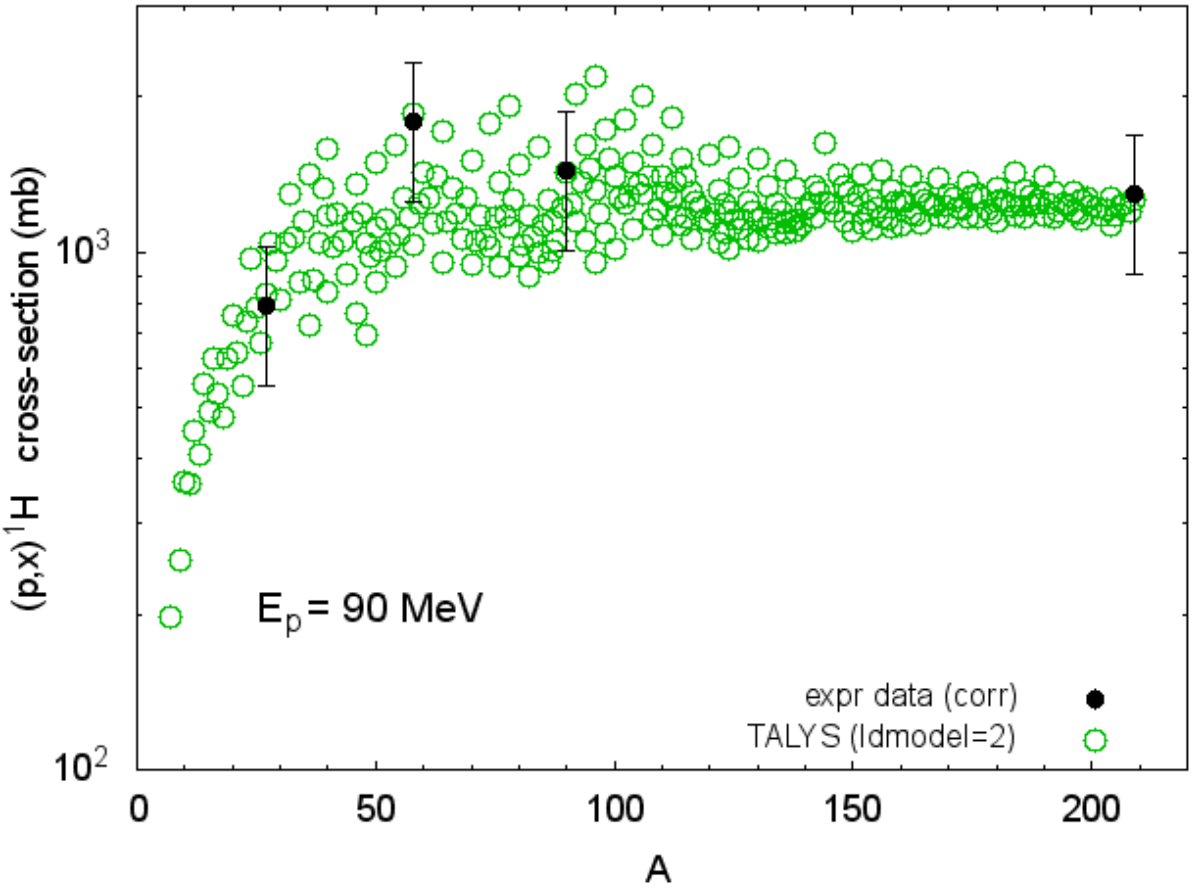

(p,x)1H cross-section (mb)
10^3
10^2
Ep = 62 MeV
expr data (corr)
TALYS (ldmodel=2)
0
50
100
150
200
A

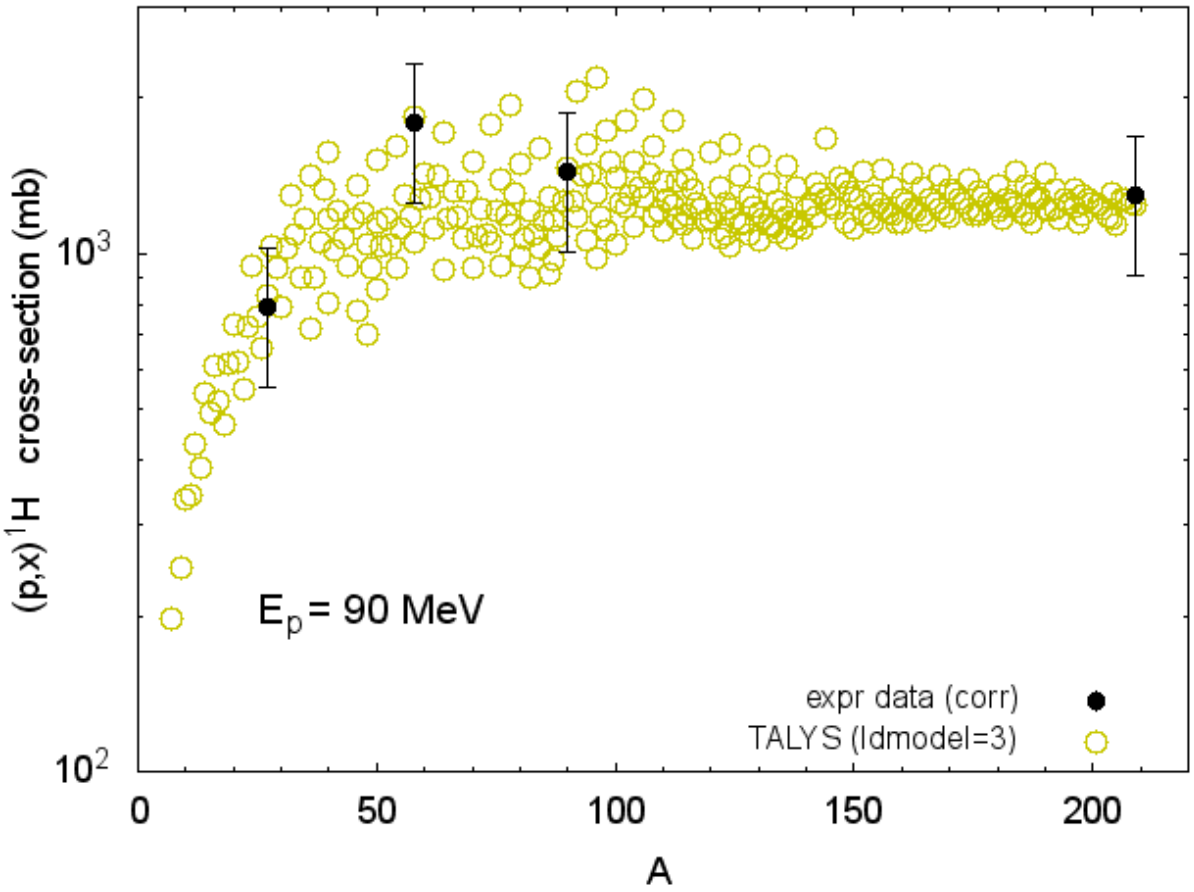

(p,x)1H cross-section (mb)
10^3
10^2
Ep = 62 MeV
expr data (corr)
TALYS (ldmodel=3)
0
50
100
150
200
A

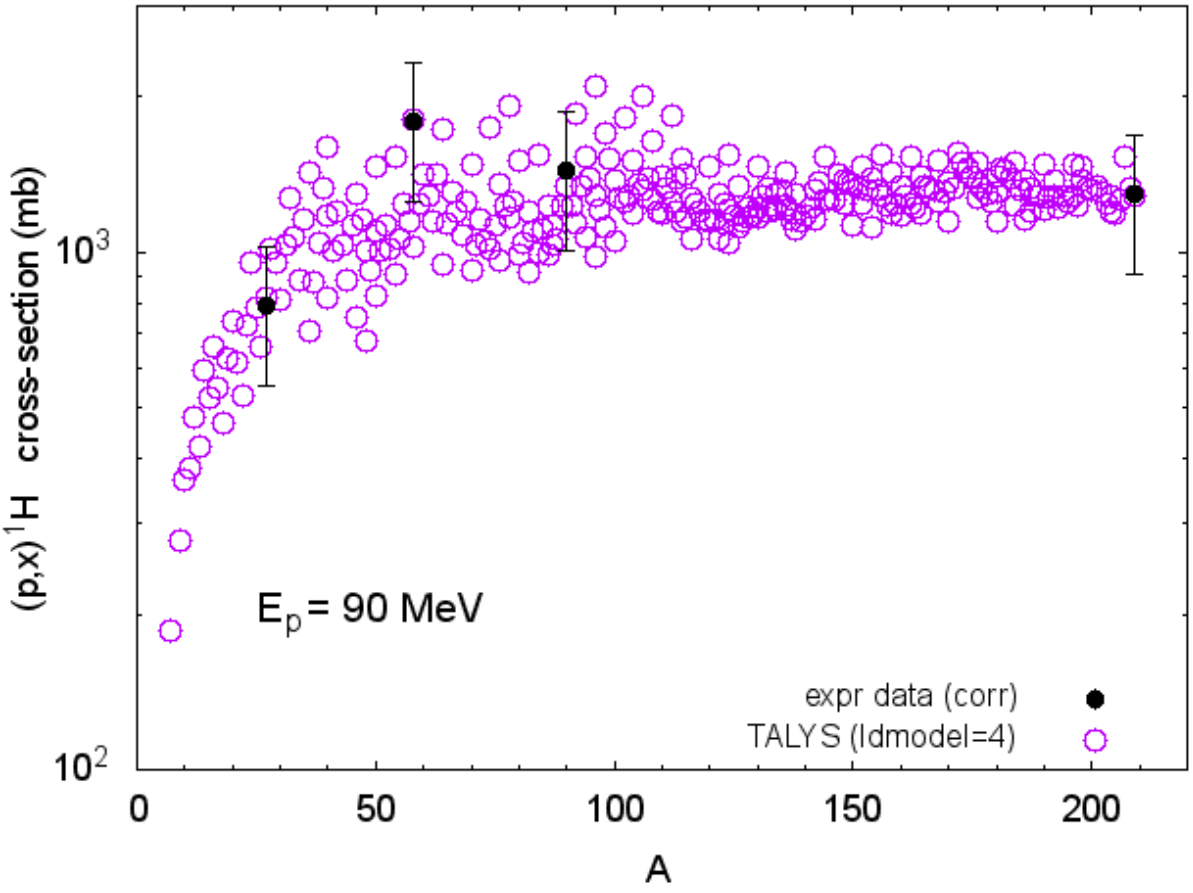

(p,x)1H cross-section (mb)
10^3
10^2
Ep = 62 MeV
expr data (corr)
TALYS (ldmodel=4)
0
50
100
150
200
A

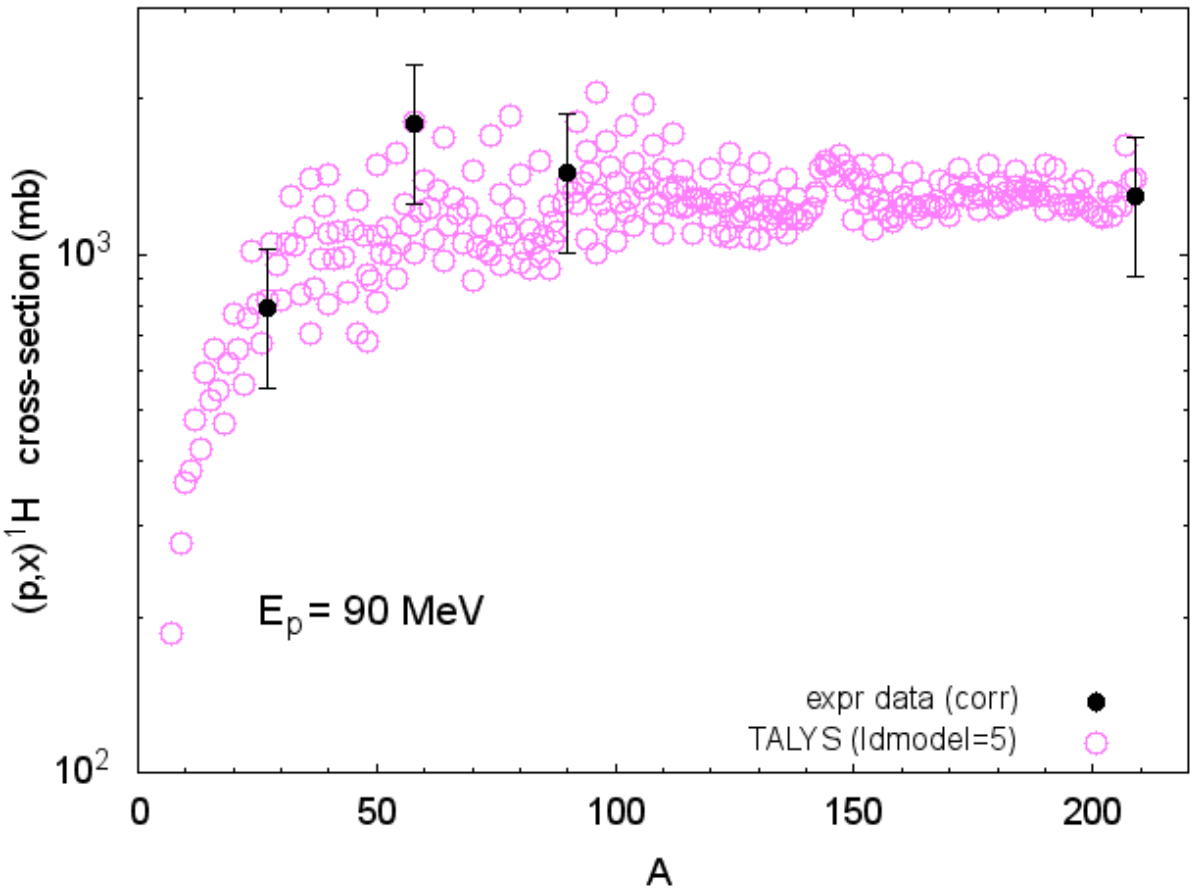

(p,x)1H cross-section (mb)
10^3
10^2
Ep = 62 MeV
expr data (corr)
TALYS (ldmodel=5)
0
50
100
150
200
A

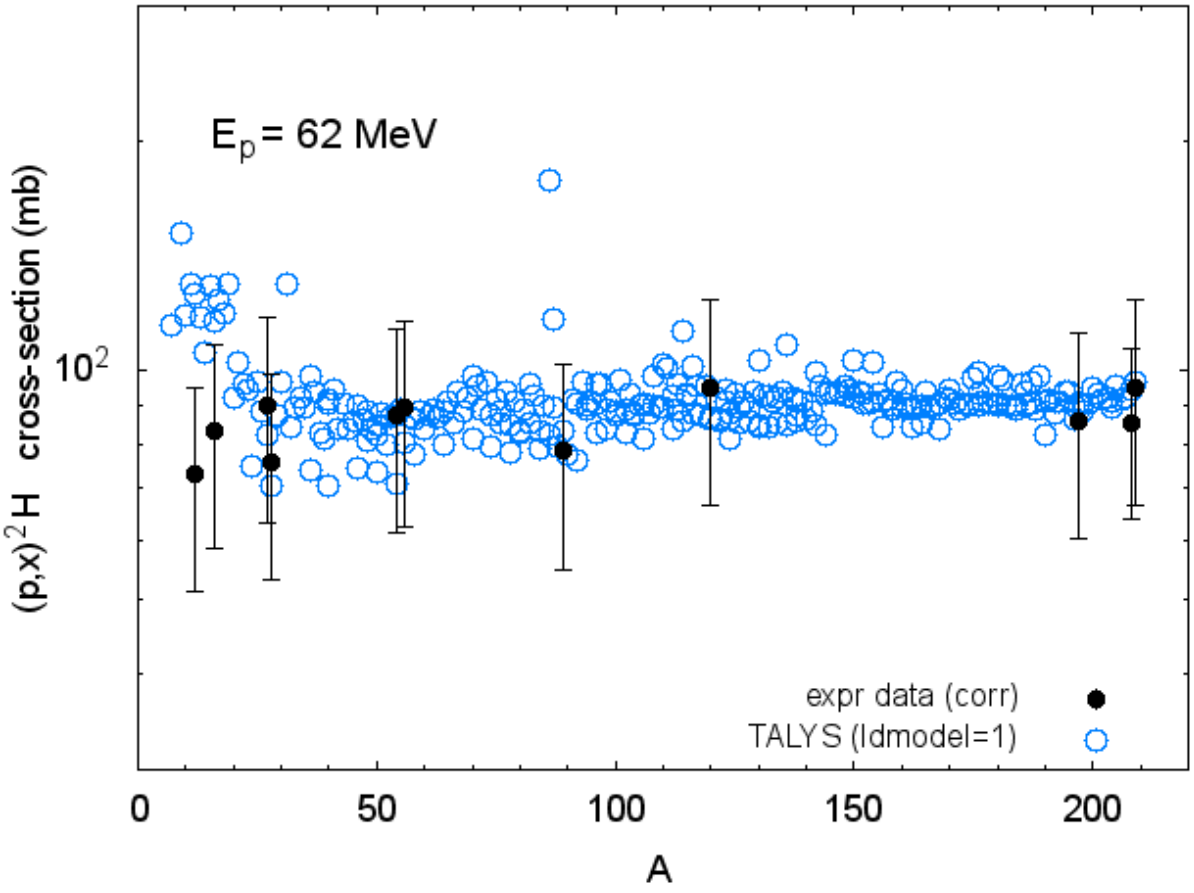

(p,x)1H cross-section (mb)
10^3
10^2
Ep = 90 MeV
expr data (corr)
TALYS (ldmodel=1)
0
50
100
150
200
A

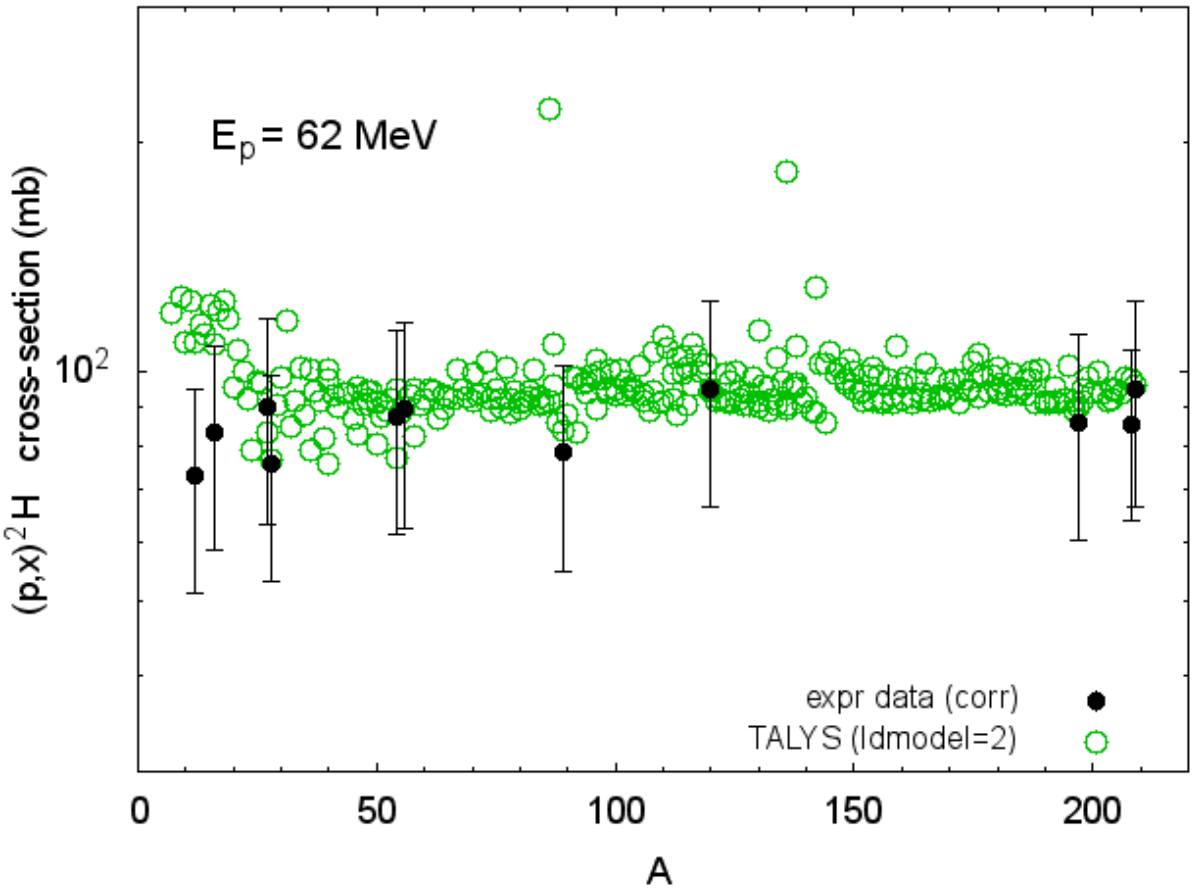

(p,x)1H cross-section (mb)
10^3
10^2
Ep = 90 MeV
expr data (corr)
TALYS (ldmodel=2)
0
50
100
150
200
A

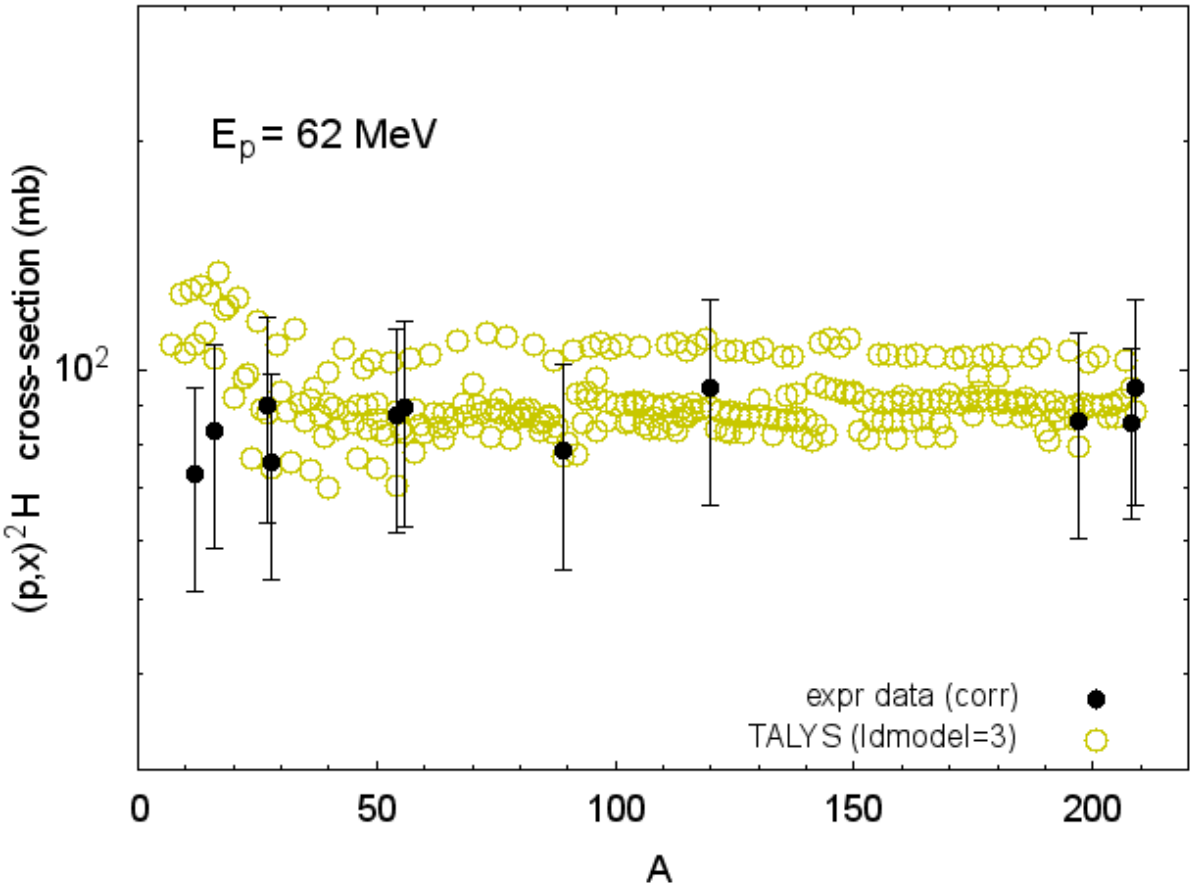

(p,x)1H cross-section (mb)
10^3
10^2
Ep = 90 MeV
expr data (corr)
TALYS (ldmodel=3)
0
50
100
150
200
A


(p,x)1H cross-section (mb)
10^3
10^2
Ep = 90 MeV
expr data (corr)
TALYS (ldmodel=4)
0
50
100
150
200
A


(p,x)1H cross-section (mb)
10^3
10^2
Ep = 90 MeV
expr data (corr)
TALYS (ldmodel=5)
0
50
100
150
200
A


E_p = 62 MeV
10^2
$(p,x)^2H$ cross-section (mb)
expr data (corr)
TALYS (ldmodel=1)
0
50
100
150
200
A


E_p = 62 MeV
10^2
$(p,x)^2H$ cross-section (mb)
expr data (corr)
TALYS (ldmodel=2)
0
50
100
150
200
A


E_p = 62 MeV
10^2
$(p,x)^2H$ cross-section (mb)
expr data (corr)
TALYS (ldmodel=3)
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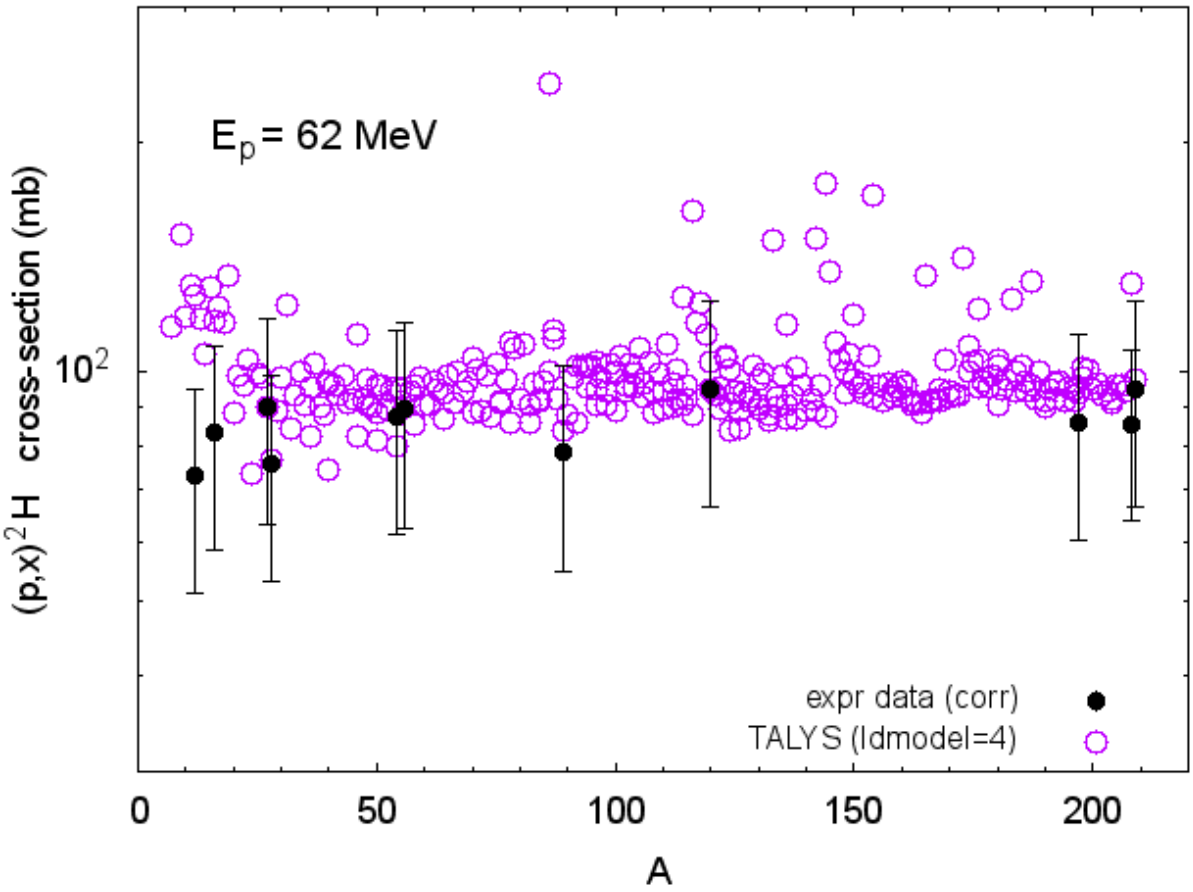
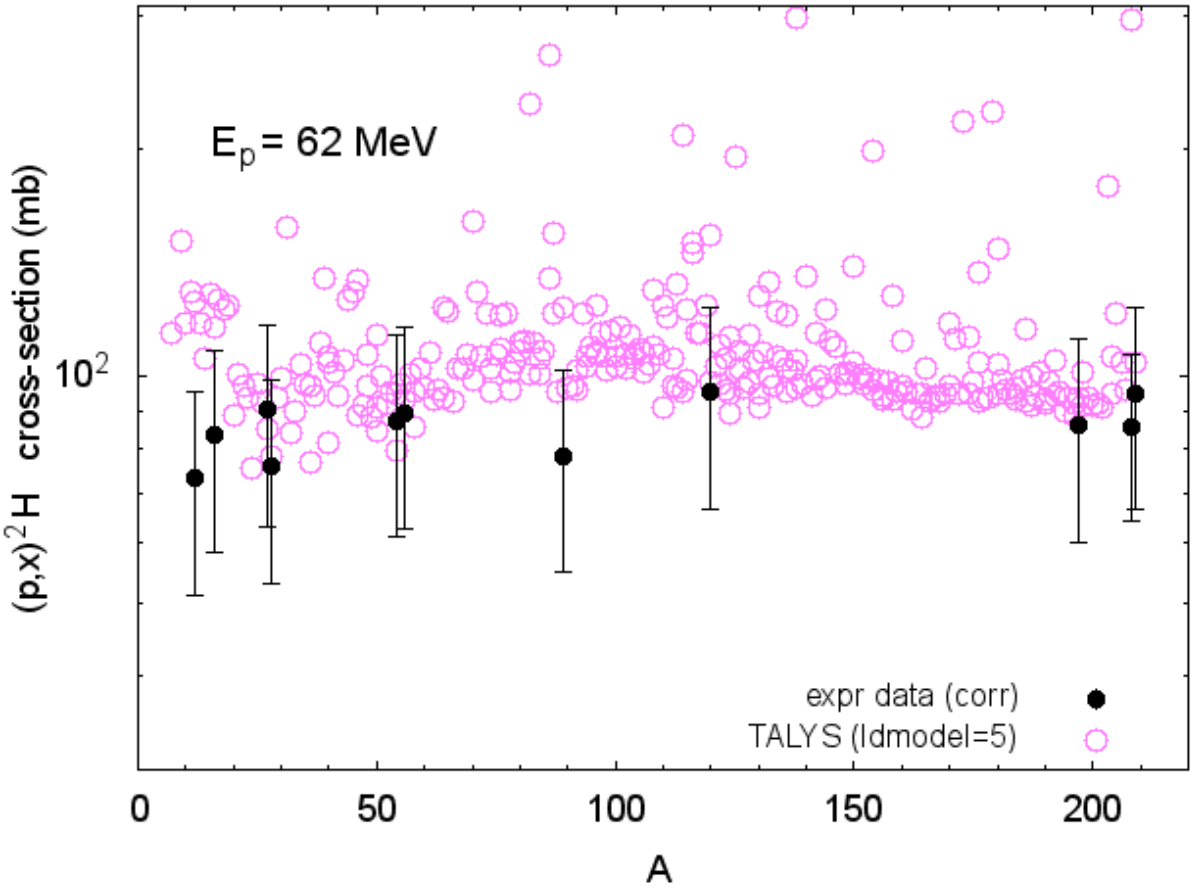
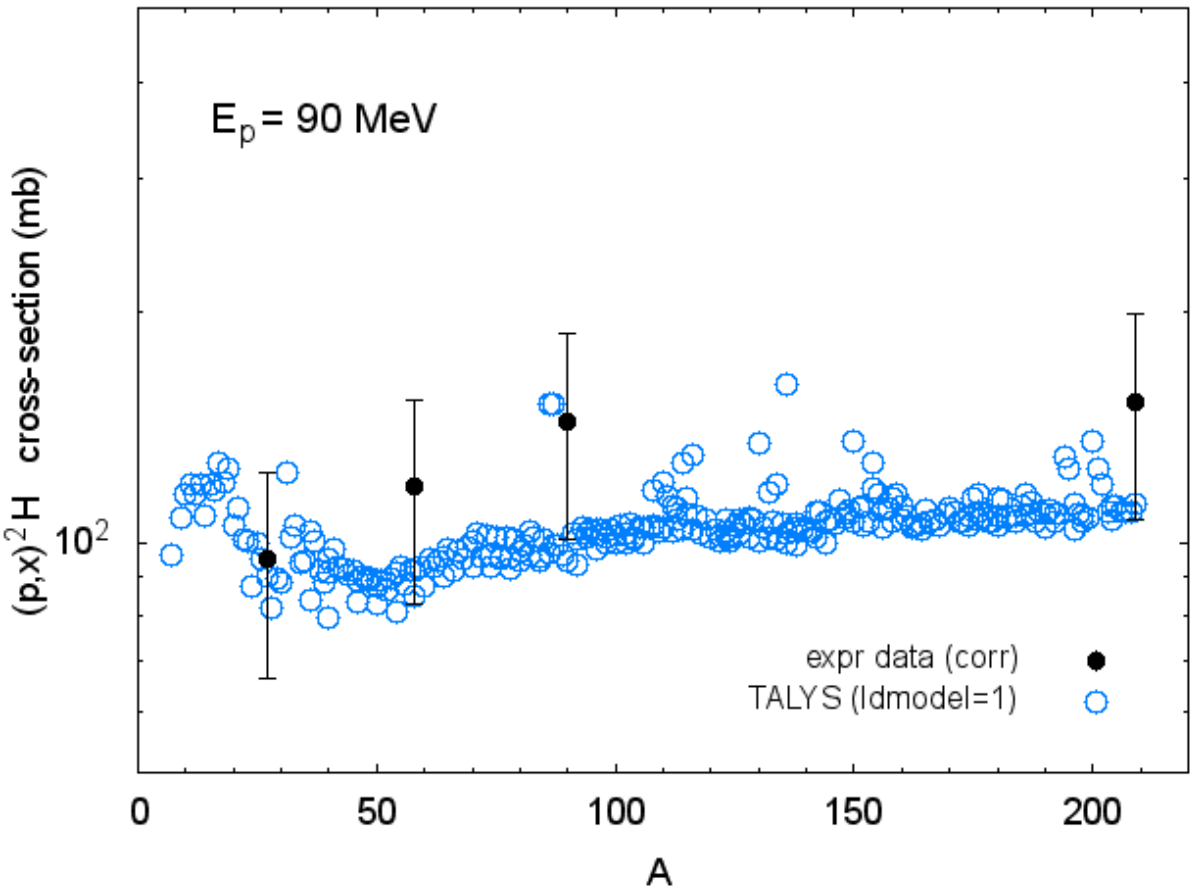
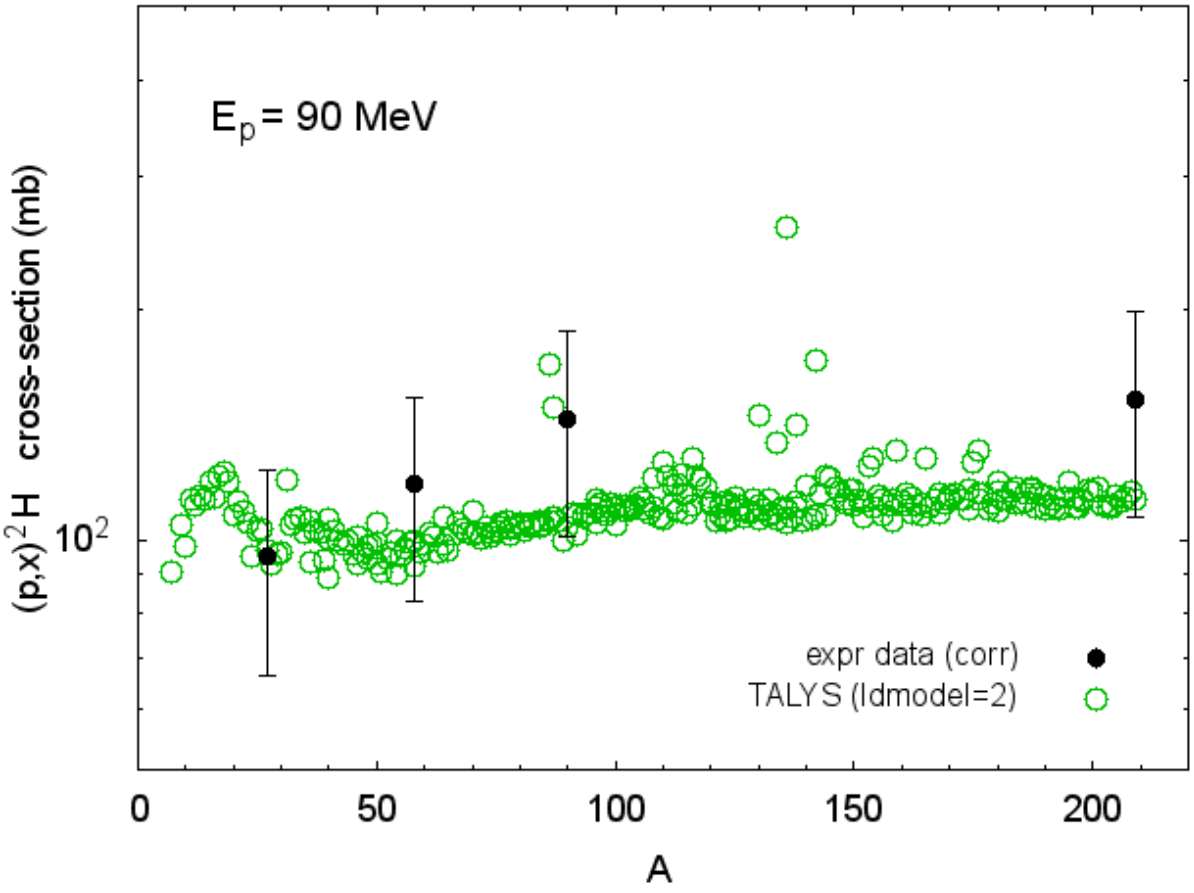
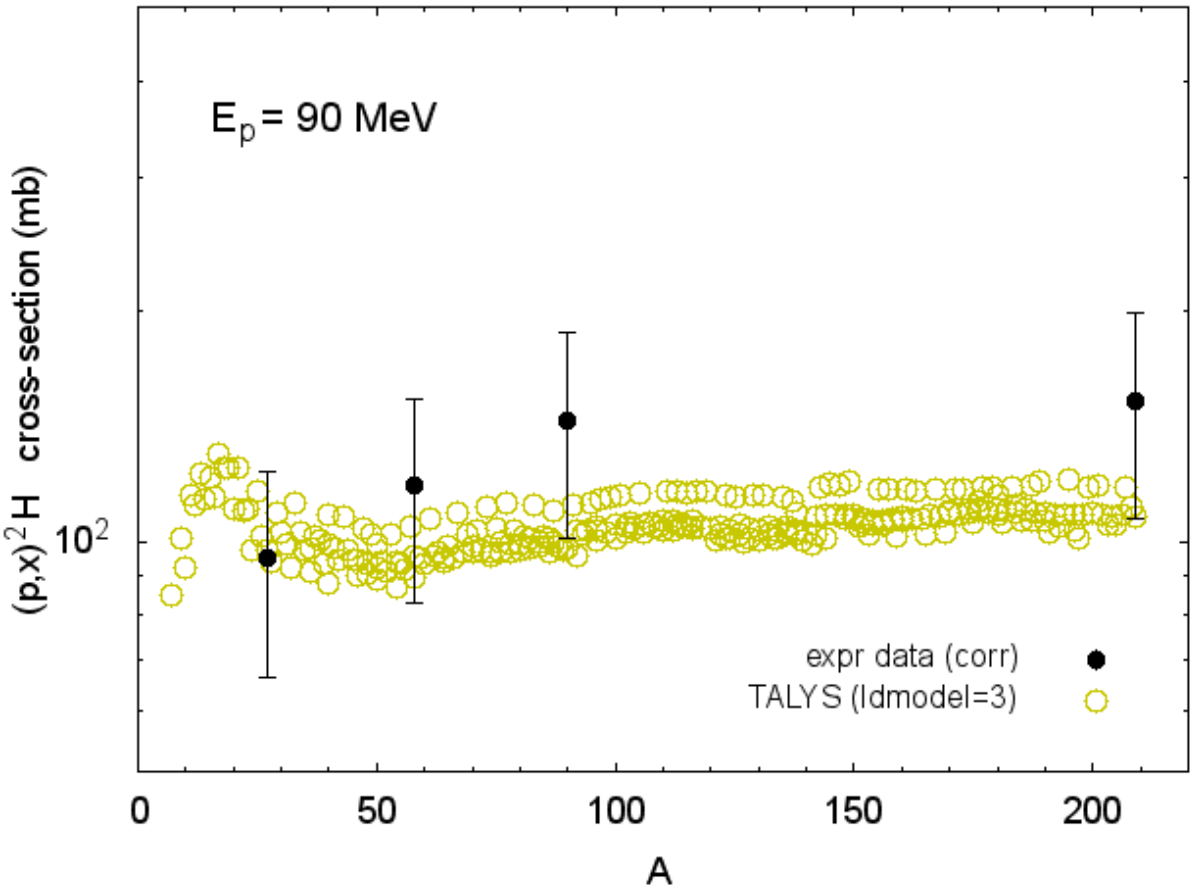
50
100
150
200
A

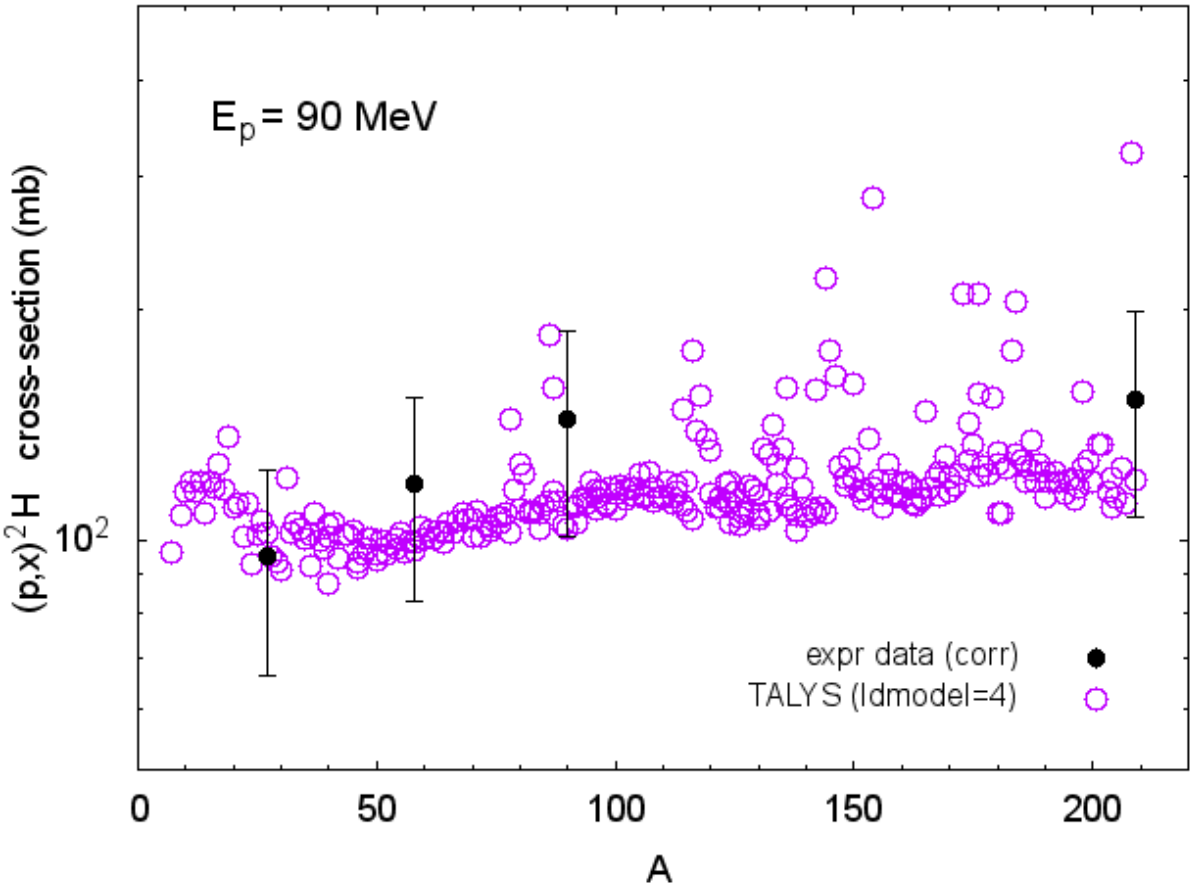

E_p = 62 MeV
10^2
$(p,x)^2H$ cross-section (mb)
expr data (corr)
TALYS (ldmodel=4)
0
50
100
150
200
A

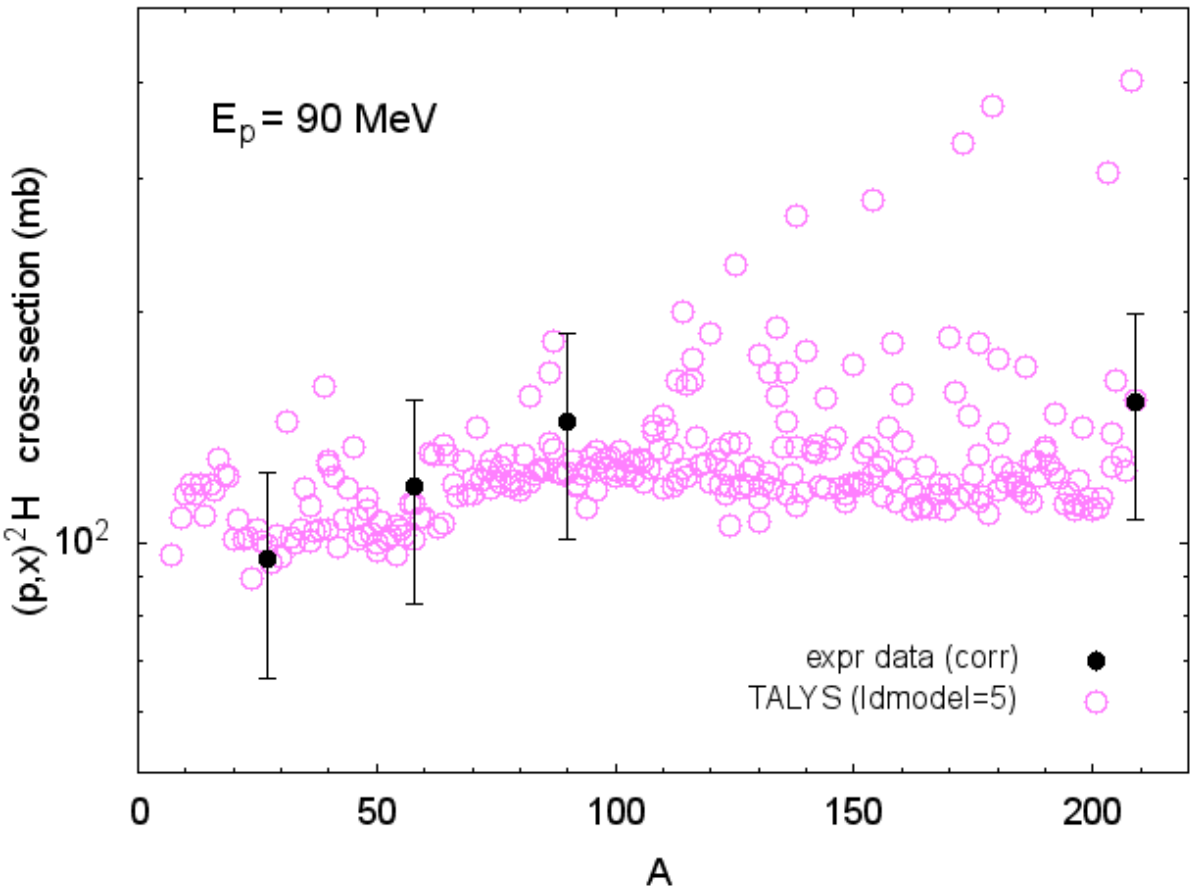

E_p = 62 MeV
$(p,x)^2H$ cross-section (mb)
10^2
expr data (corr)
TALYS (ldmodel=5)
0
50
100
150
200
A

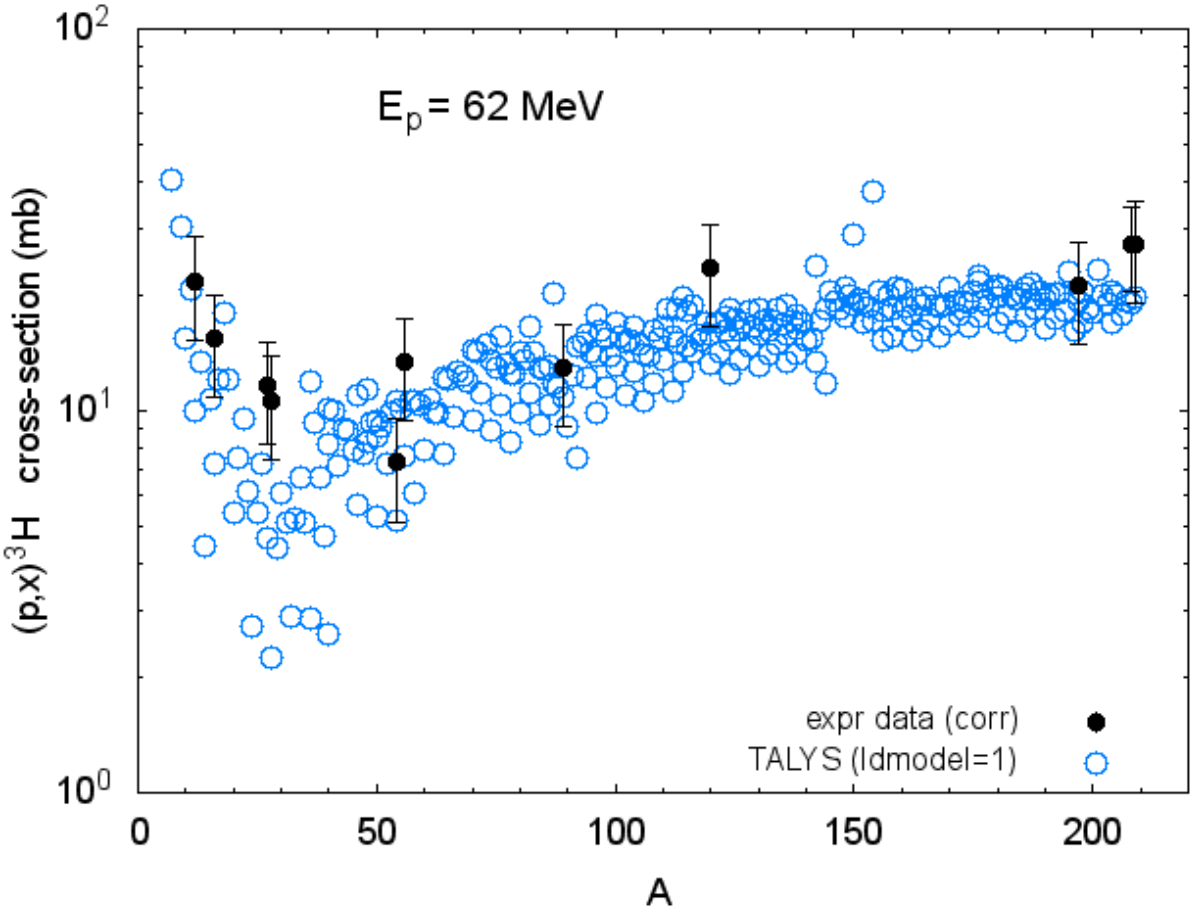

E_p = 90 MeV
$(p,x)^2H$ cross-section (mb)
10^2
expr data (corr)
TALYS (ldmodel=1)
0
50
100
150
200
A

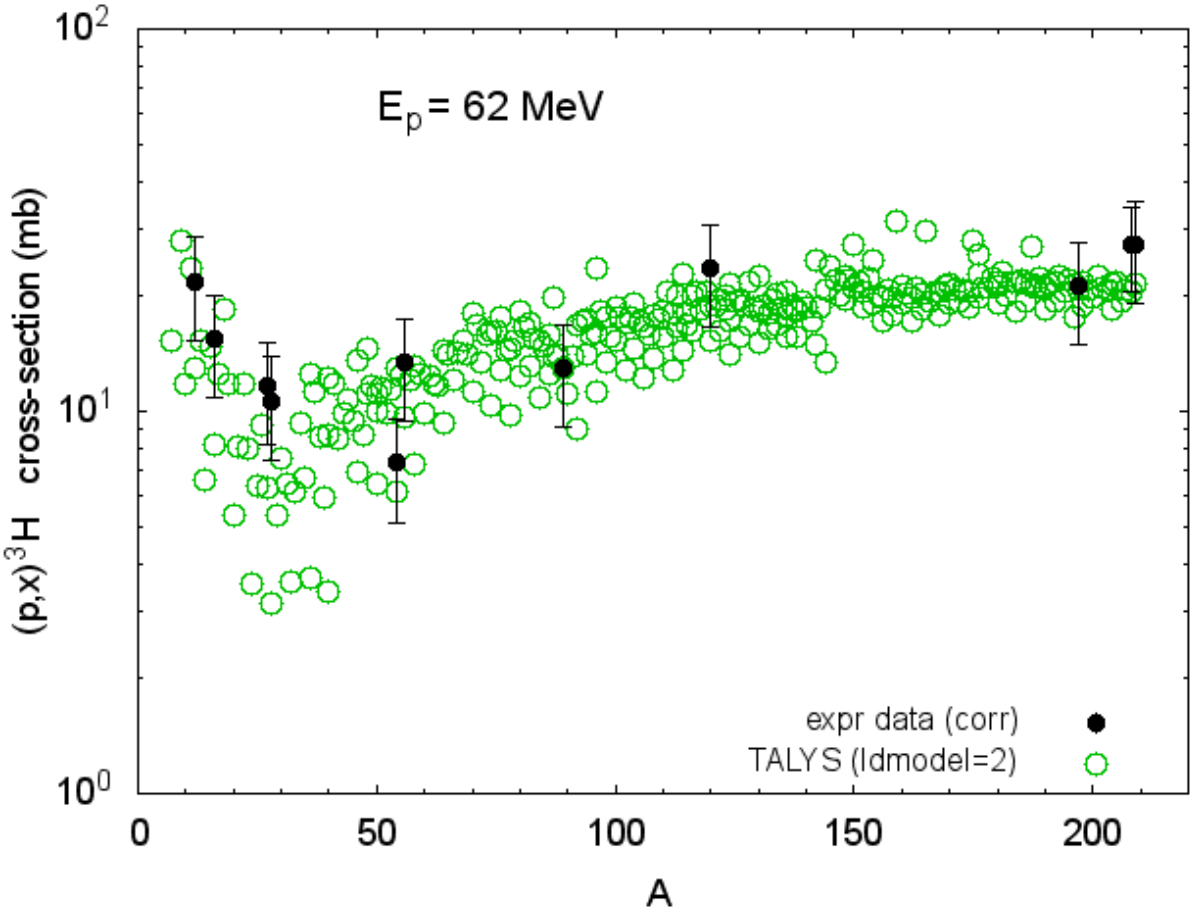

E_p = 90 MeV
$(p,x)^2H$ cross-section (mb)
10^2
expr data (corr)
TALYS (ldmodel=2)
0
50
100
150
200
A

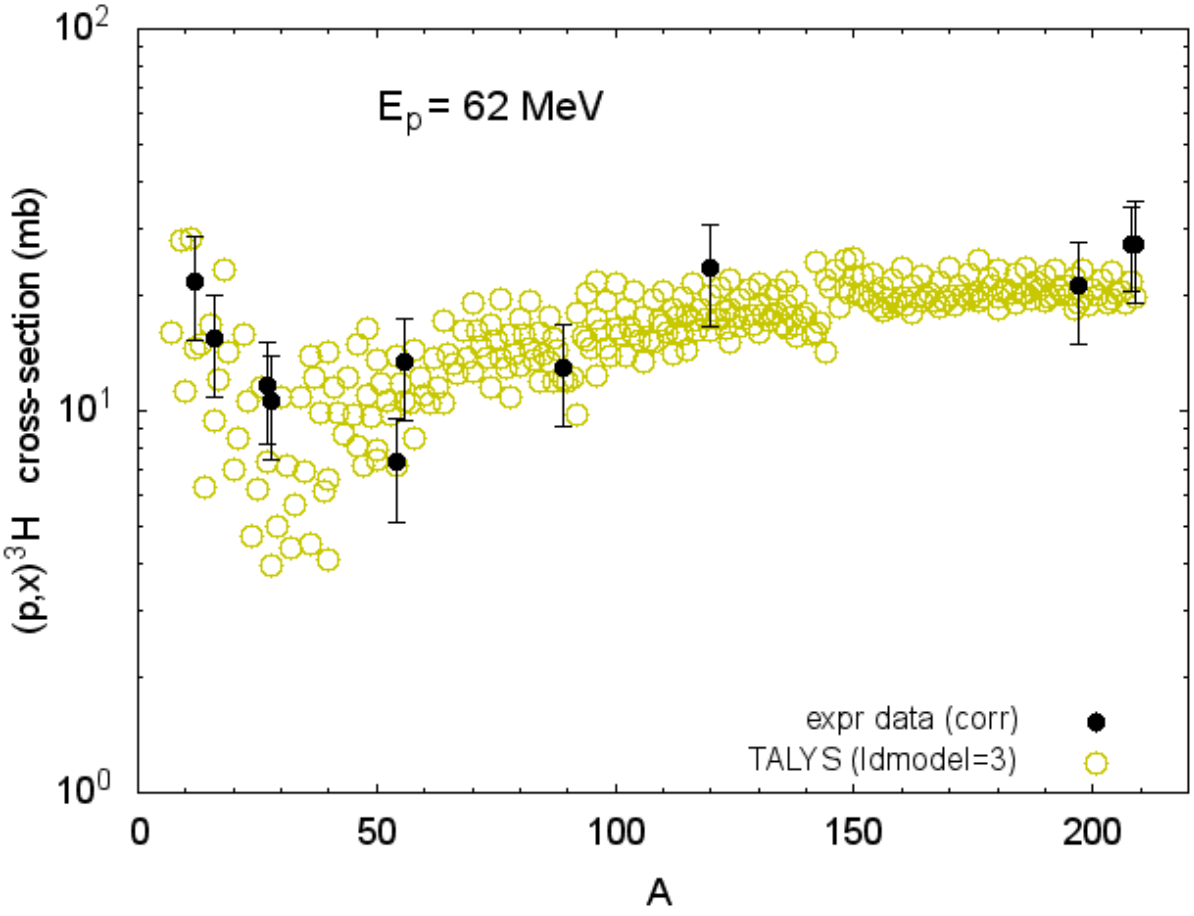

E_p = 90 MeV
$(p,x)^2H$ cross-section (mb)
10^2
expr data (corr)
TALYS (ldmodel=3)
0
50
100
150
200
A

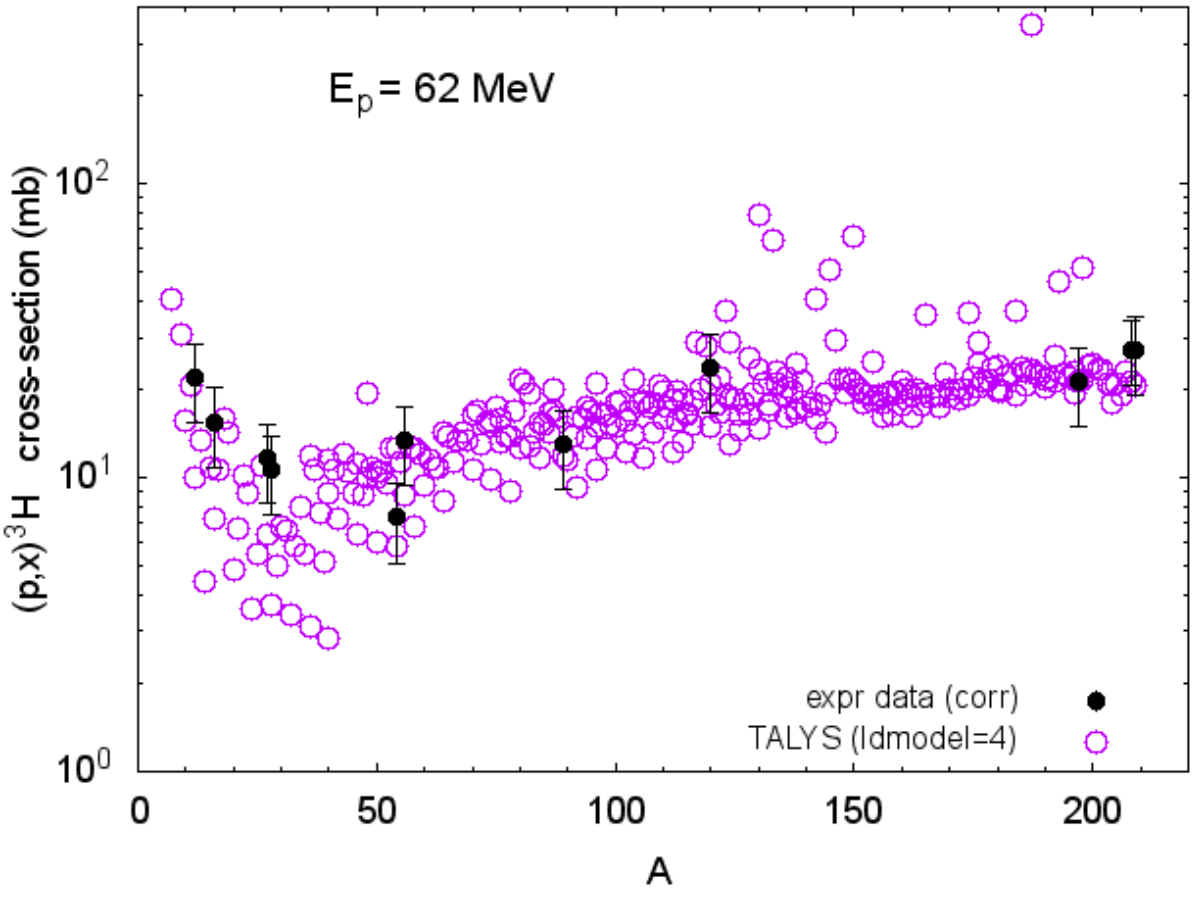

E_p = 90 MeV
$(p,x)^2H$ cross-section (mb)
10^2
expr data (corr)
TALYS (ldmodel=4)
0
50
100
150
200
A

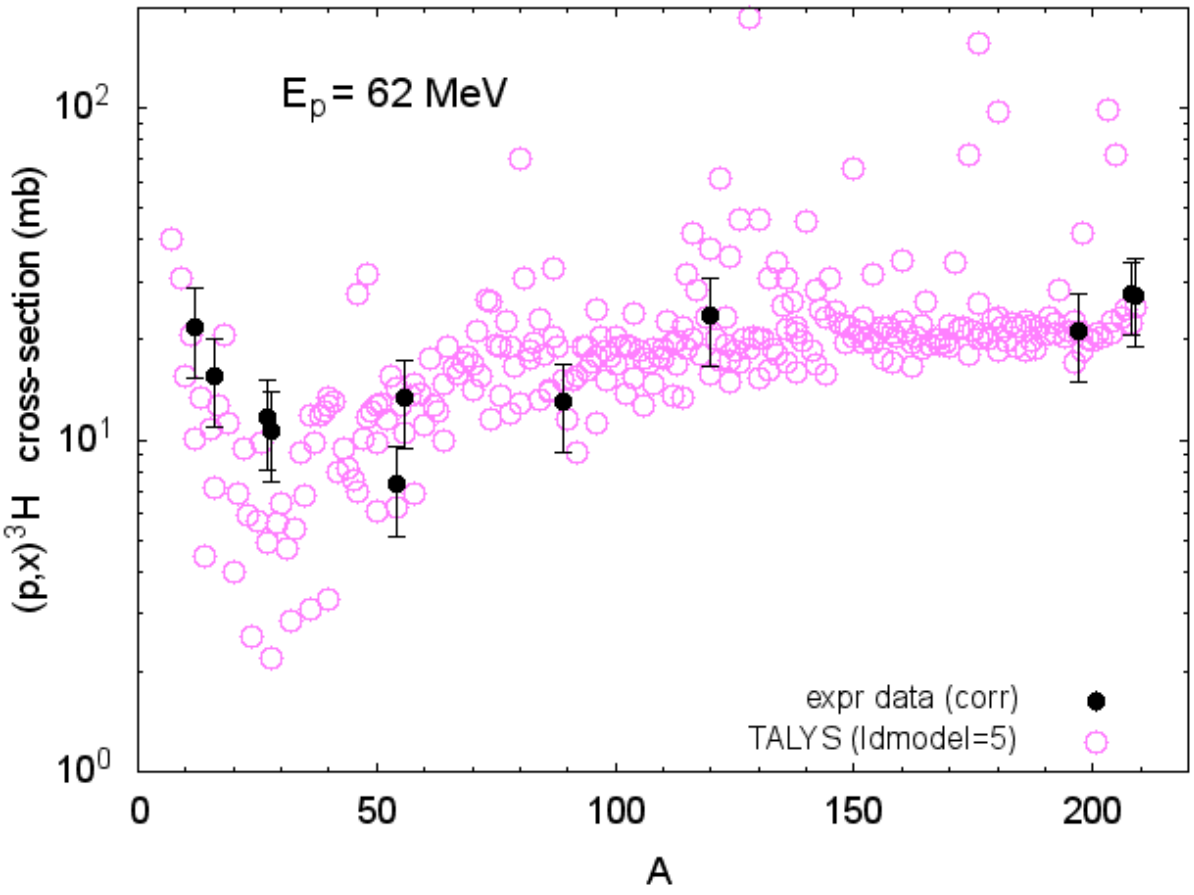

E_p = 90 MeV
$(p,x)^2H$ cross-section (mb)
10^2
expr data (corr)
TALYS (ldmodel=5)
0
50
100
150
200
A

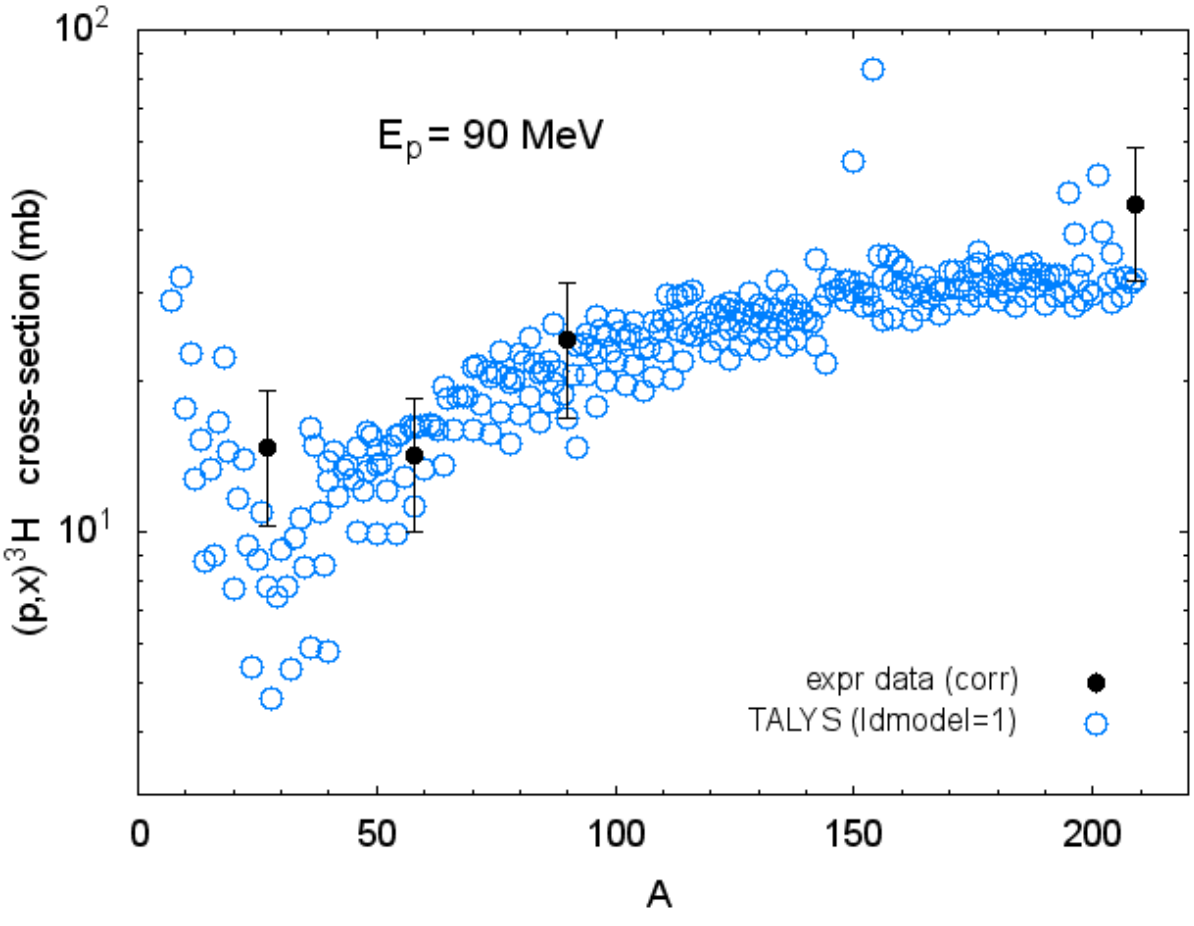

E_p = 62 MeV
$(p,x)^3H$ cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
expr data (corr)
TALYS (ldmodel=1)

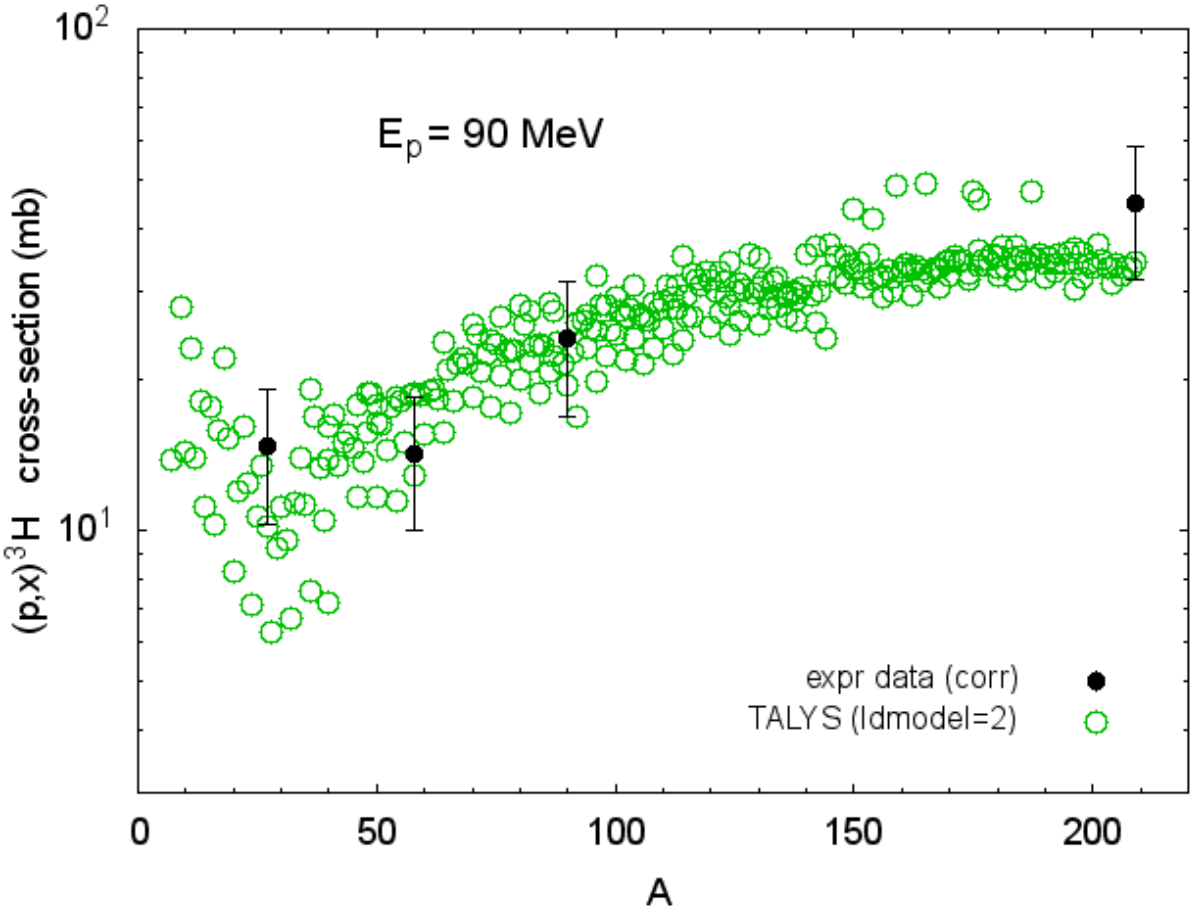

E_p = 62 MeV
$(p,x)^3H$ cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
expr data (corr)
TALYS (ldmodel=2)

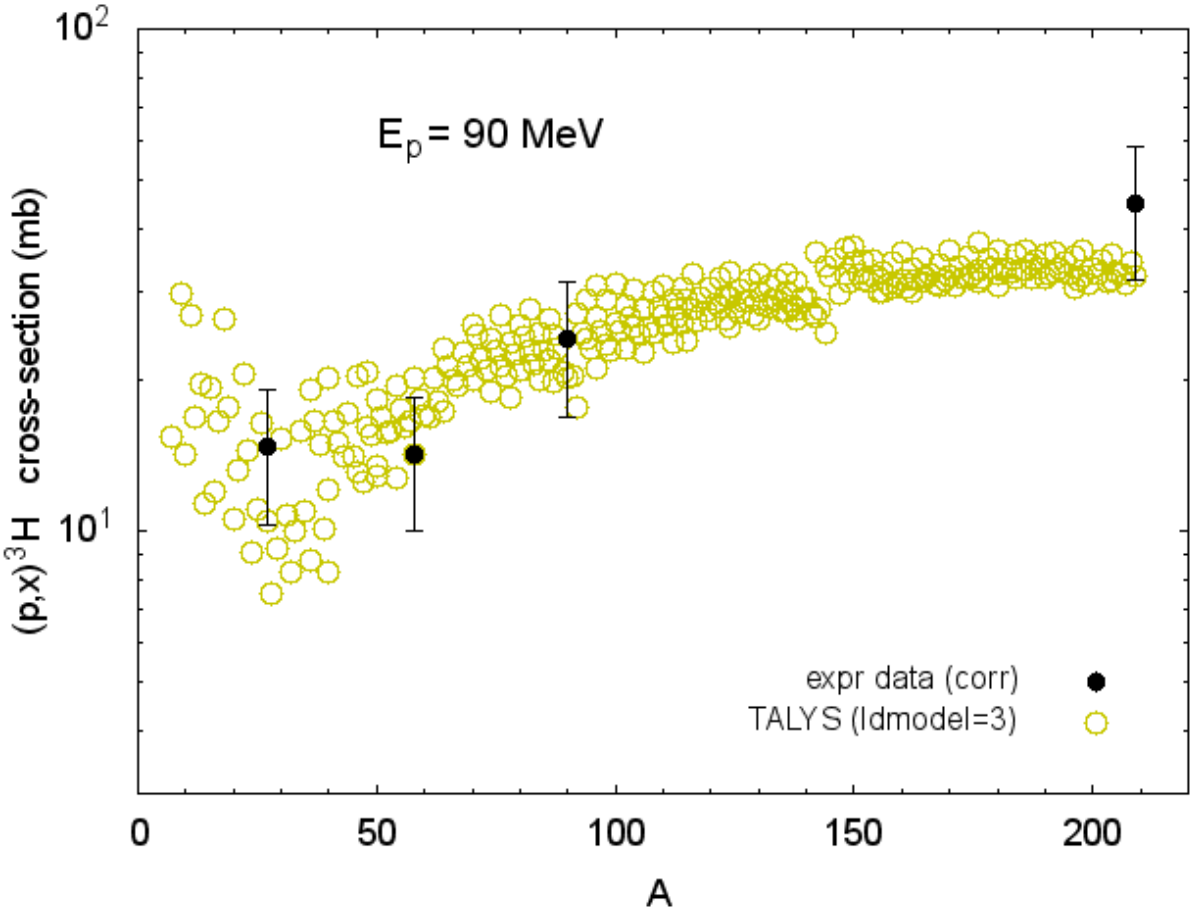

E_p = 62 MeV
(p,x)^{3}H cross-section (mb)
A
expr data (corr)
TALYS (ldmodel=3)
10^2
10^1
10^0
0
50
100
150
200

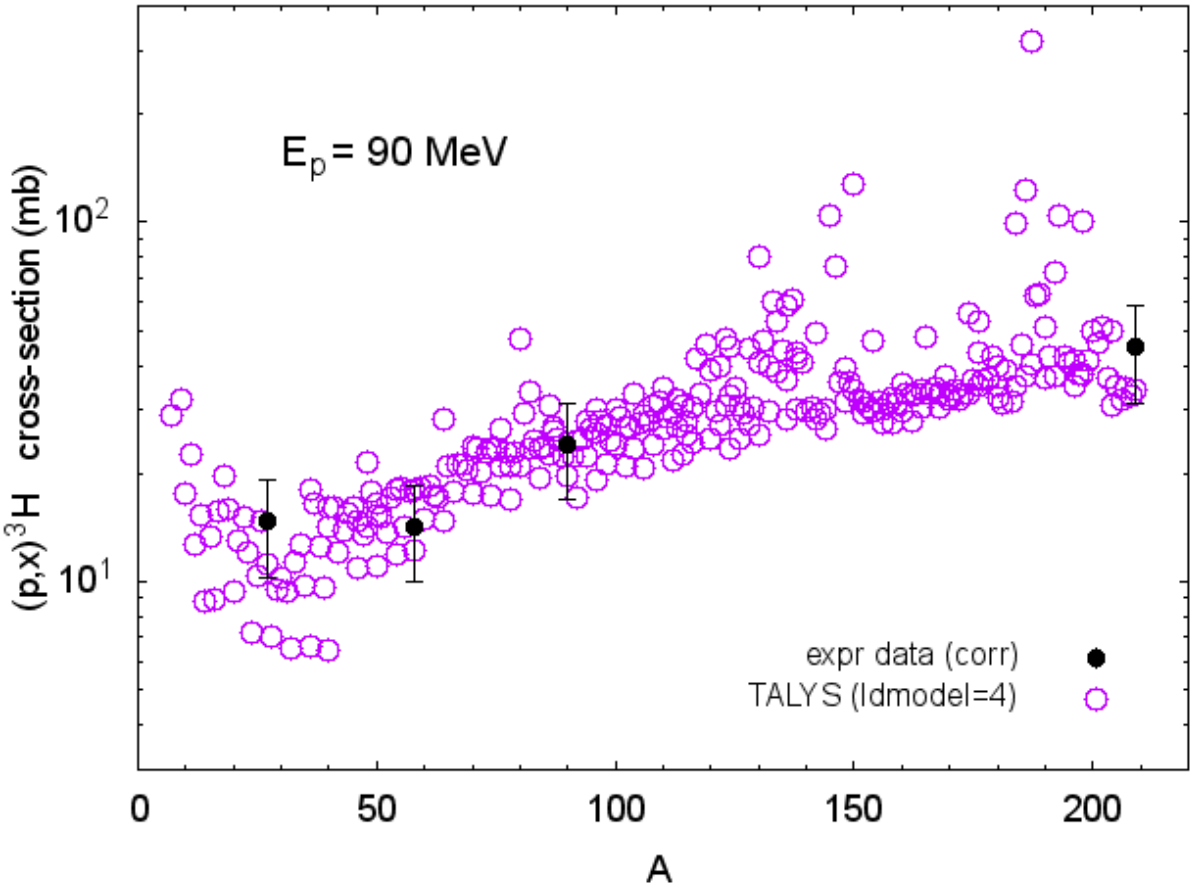

E_p = 62 MeV
(p,x)^{3}H cross-section (mb)
A
expr data (corr)
TALYS (ldmodel=4)
10^2
10^1
10^0
0
50
100
150
200

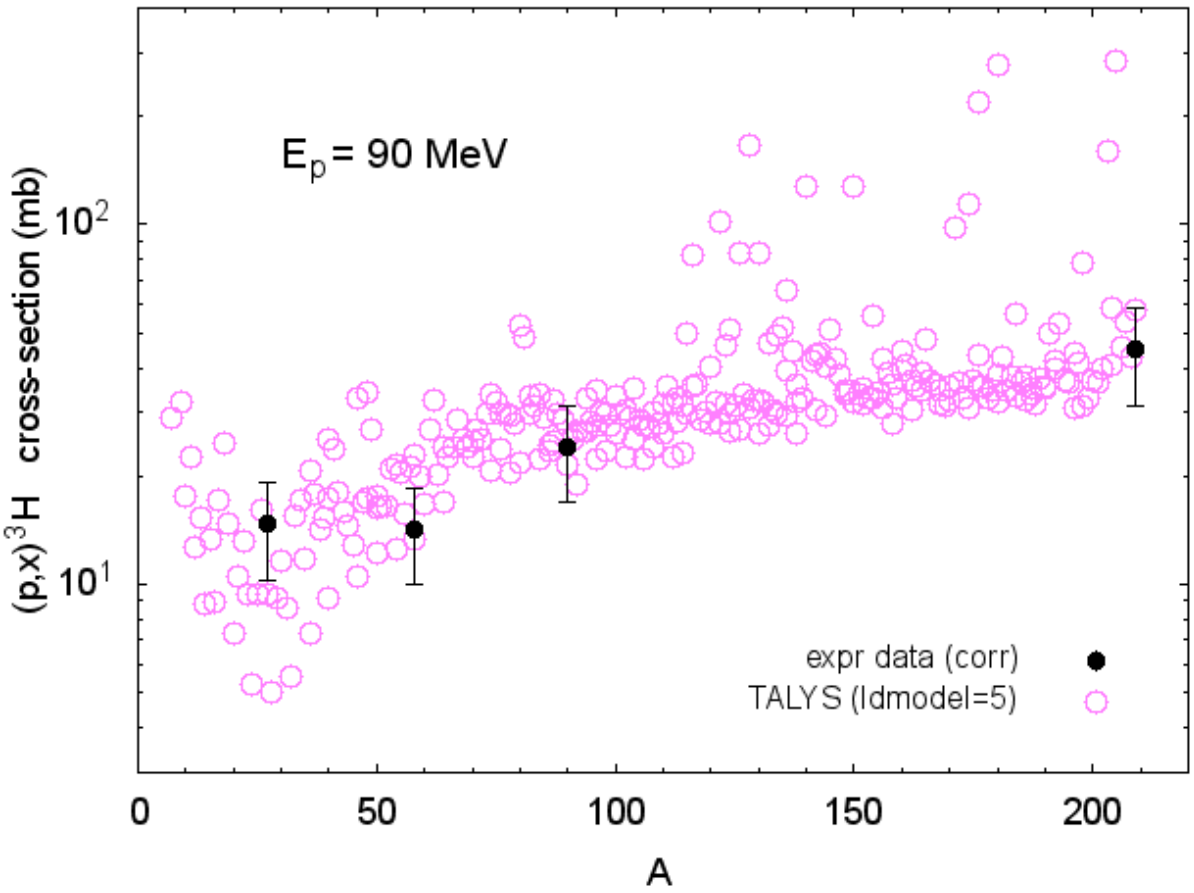

E_p = 62 MeV
10^2
10^1
10^0
(p,x)^{3}H cross-section (mb)
0
50
100
150
200
A
expr data (corr)
TALYS (ldmodel=5)

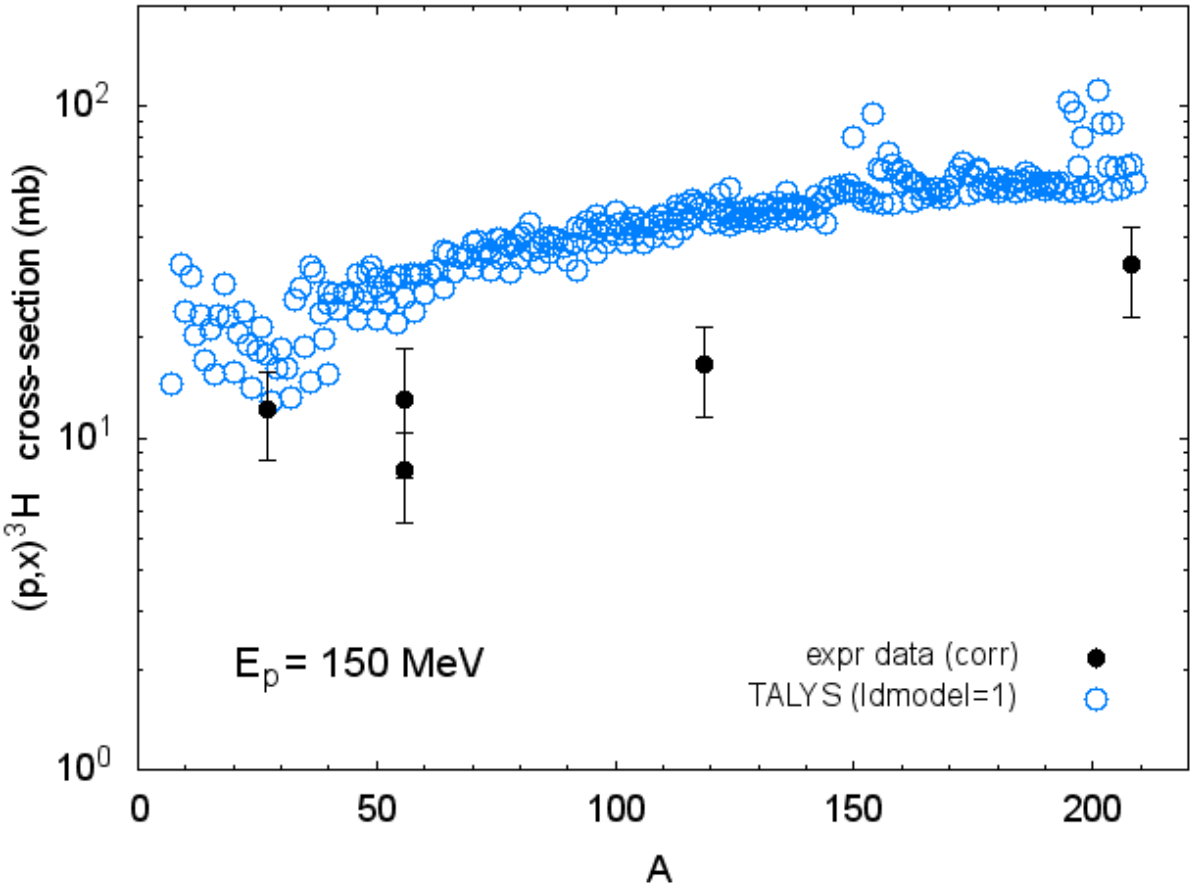

E_p = 90 MeV
10^2
10^1
(p,x)^{3}H cross-section (mb)
0
50
100
150
200
A
expr data (corr)
TALYS (ldmodel=1)

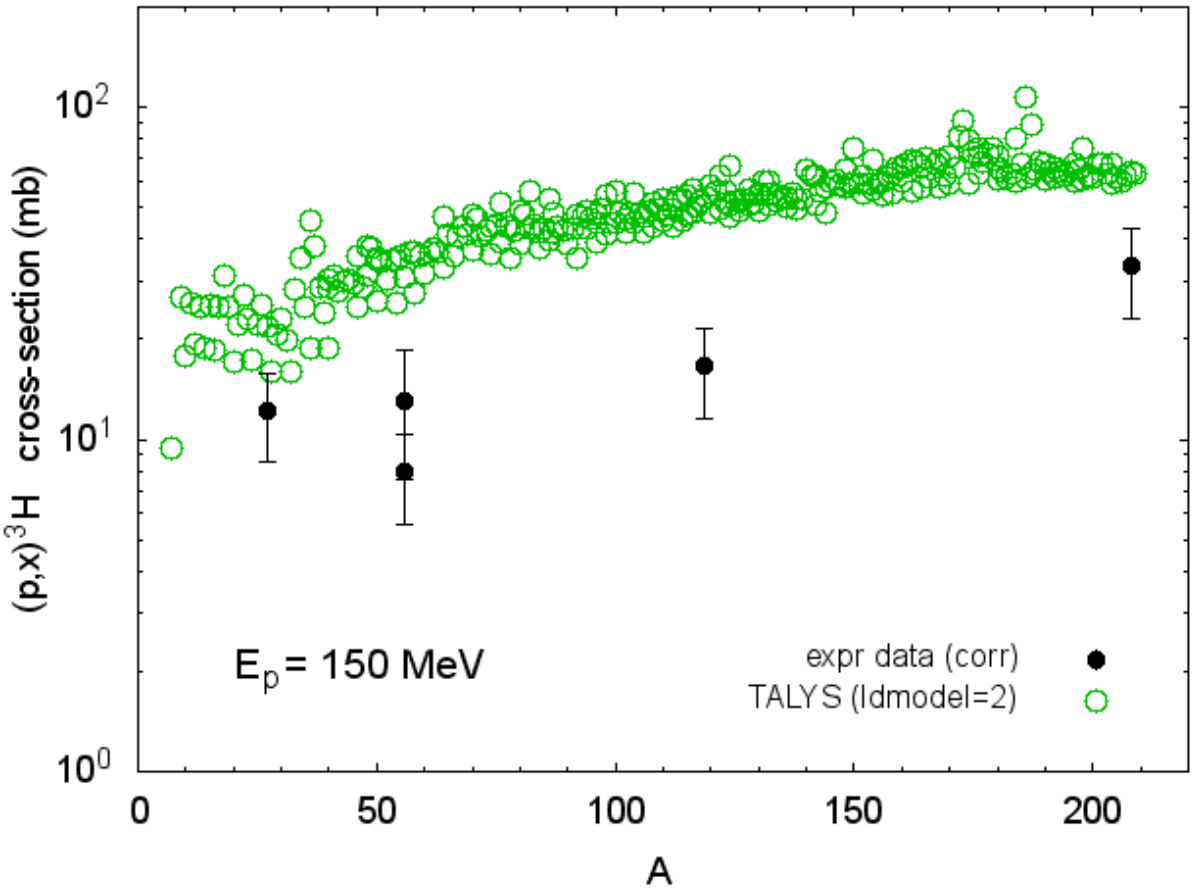

10^2
E_p = 90 MeV
$(p,x)^3H$ cross-section (mb)
10^1
expr data (corr)
TALYS (ldmodel=2)
0
50
100
150
200
A

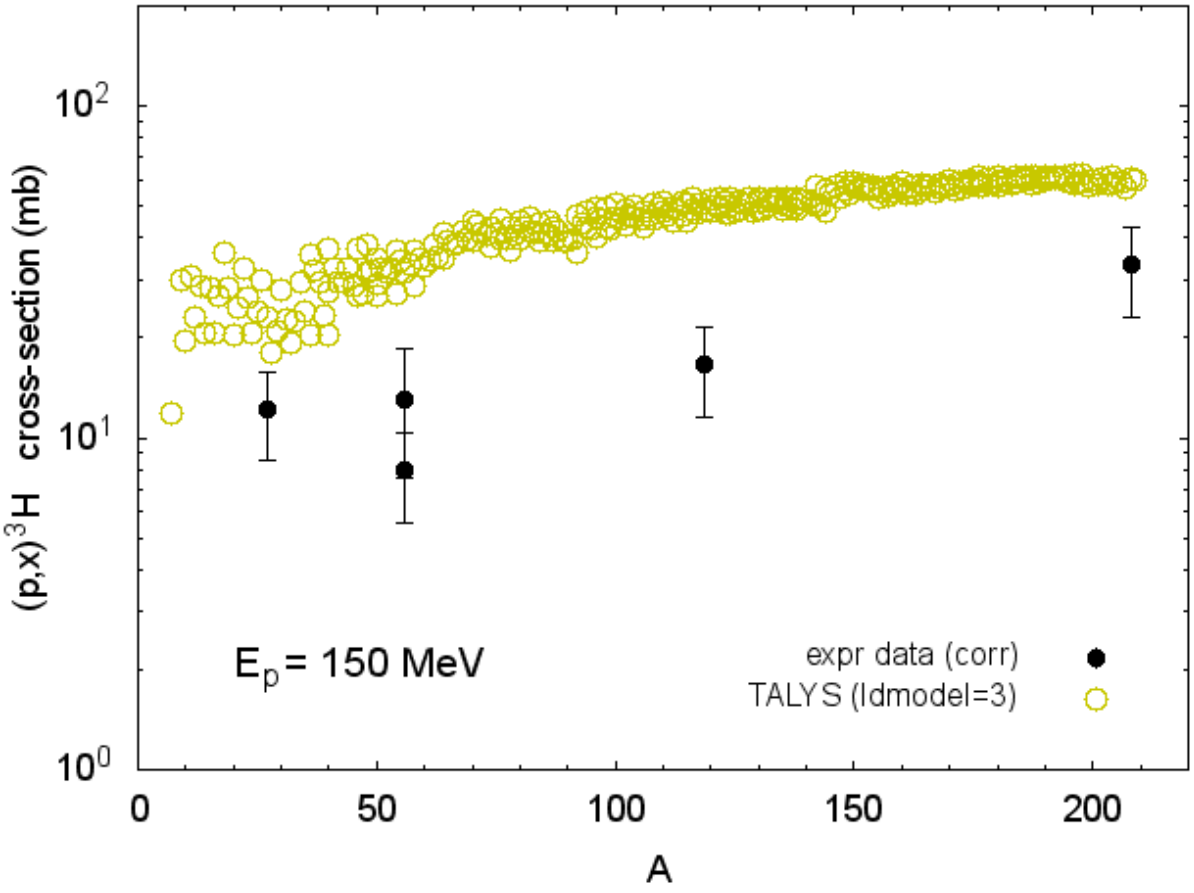

10^2
E_p = 90 MeV
$(p,x)^3H$ cross-section (mb)
10^1
expr data (corr)
TALYS (ldmodel=3)
0
50
100
150
200
A

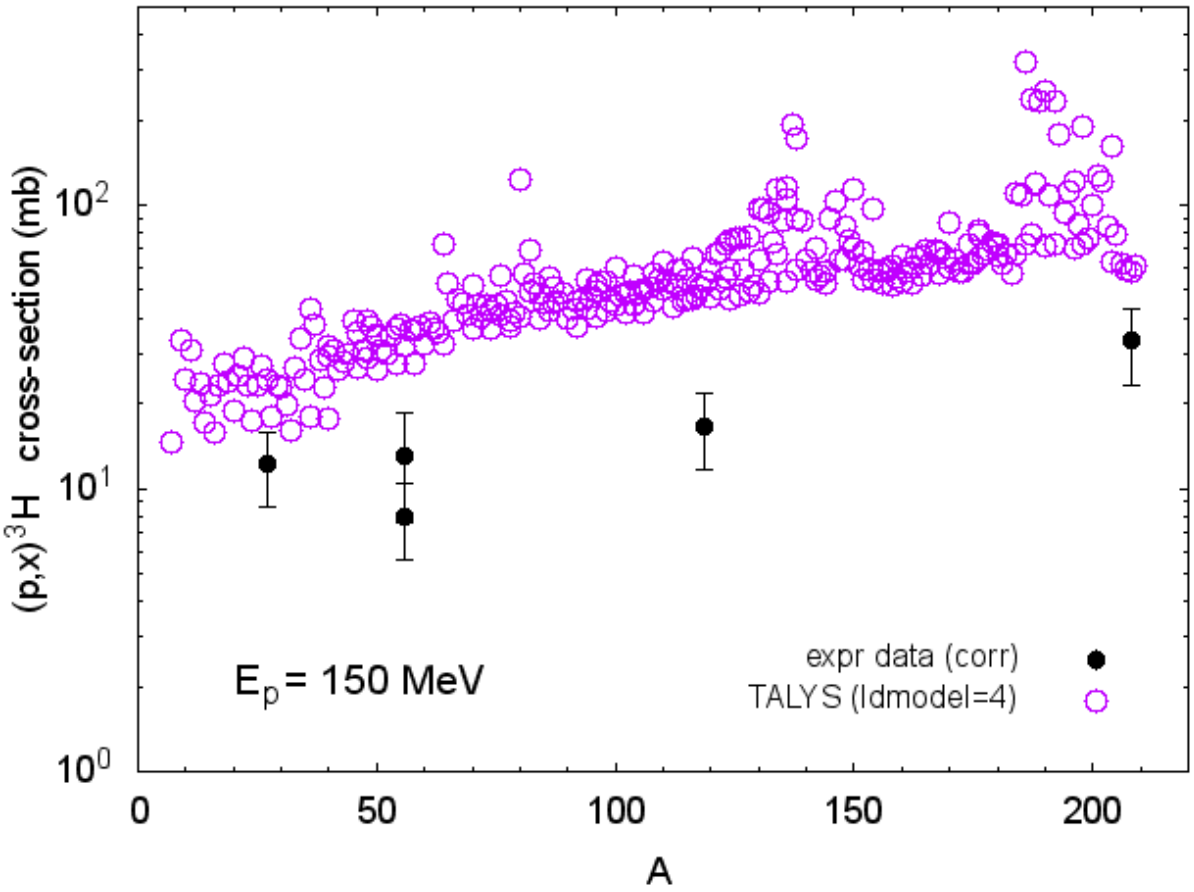

E$_p$ = 90 MeV
(p,x)^{3}H cross-section (mb)
10^2
10^1
0
50
100
150
200
A
expr data (corr)
TALYS (ldmodel=4)

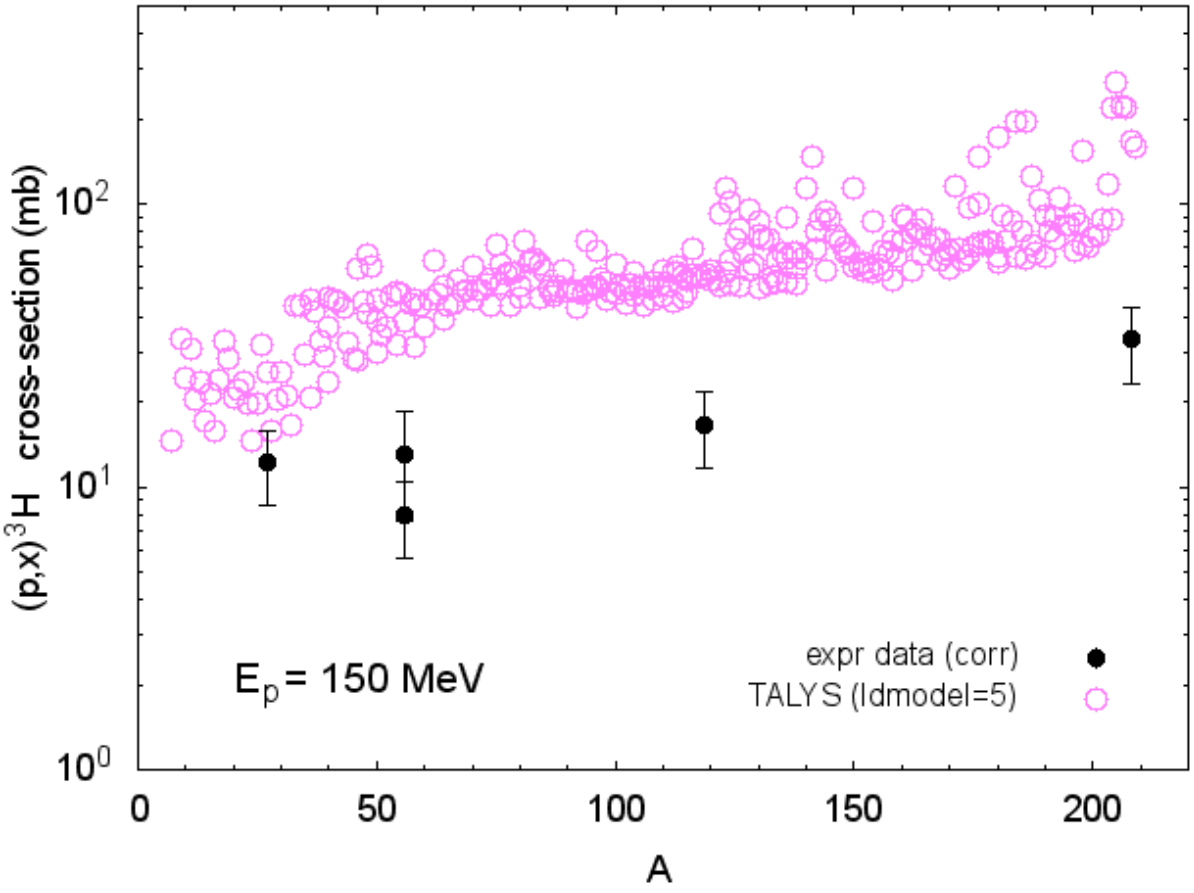

E$_p$ = 90 MeV
(p,x)^{3}H cross-section (mb)
10^2
10^1
0
50
100
150
200
A
expr data (corr)
TALYS (ldmodel=5)

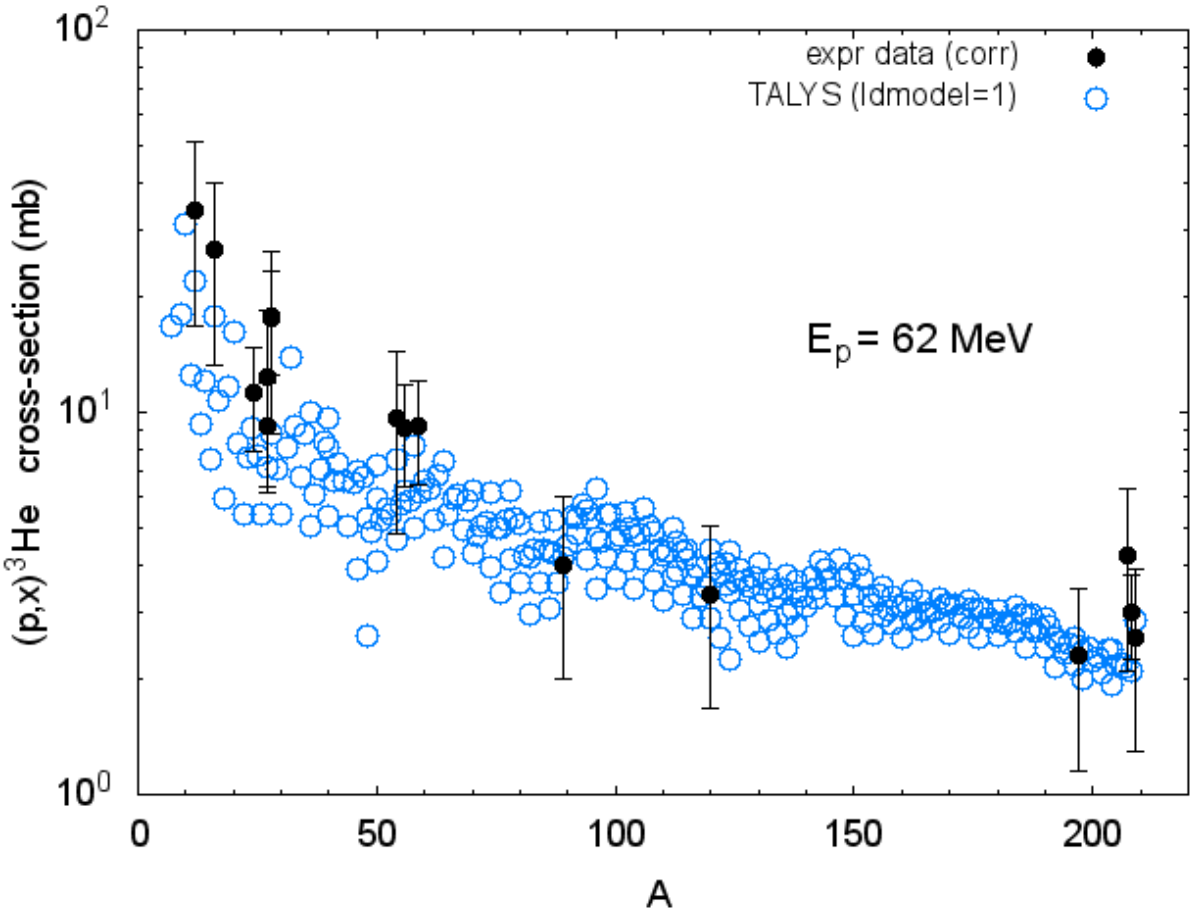

(p,x)3H cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
Ep = 150 MeV
expr data (corr)
TALYS (ldmodel=1)

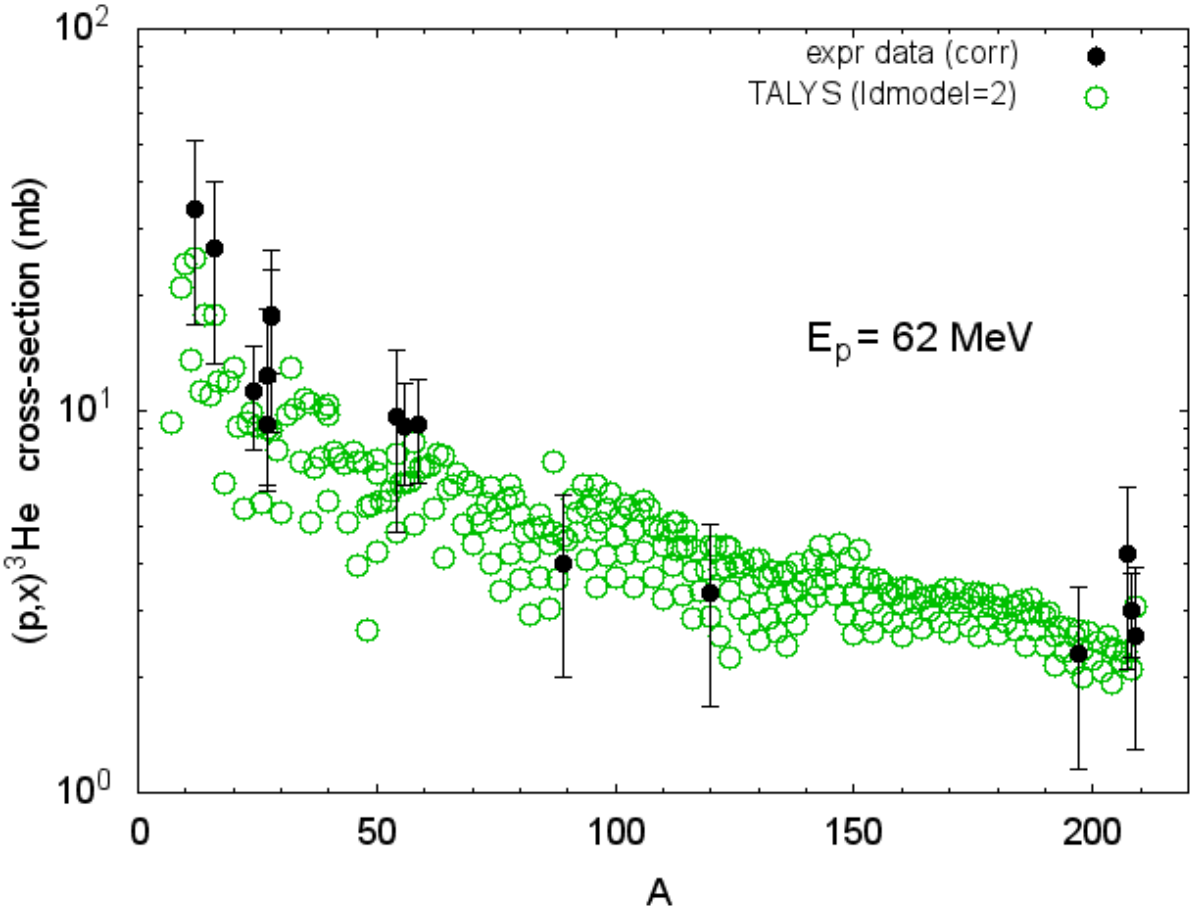

(p,x)3H cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
Ep = 150 MeV
expr data (corr)
TALYS (ldmodel=2)

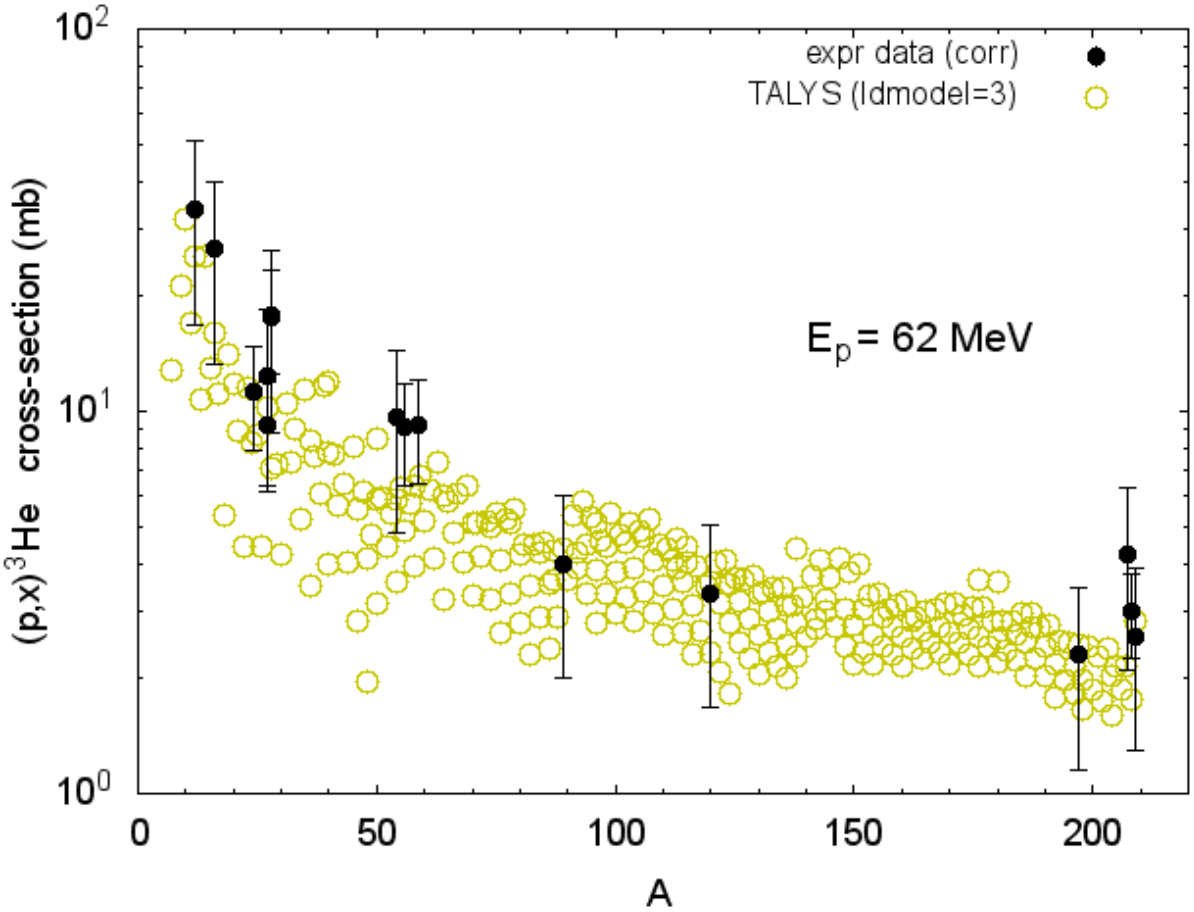

(p,x)3H cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
Ep = 150 MeV
expr data (corr)
TALYS (ldmodel=3)

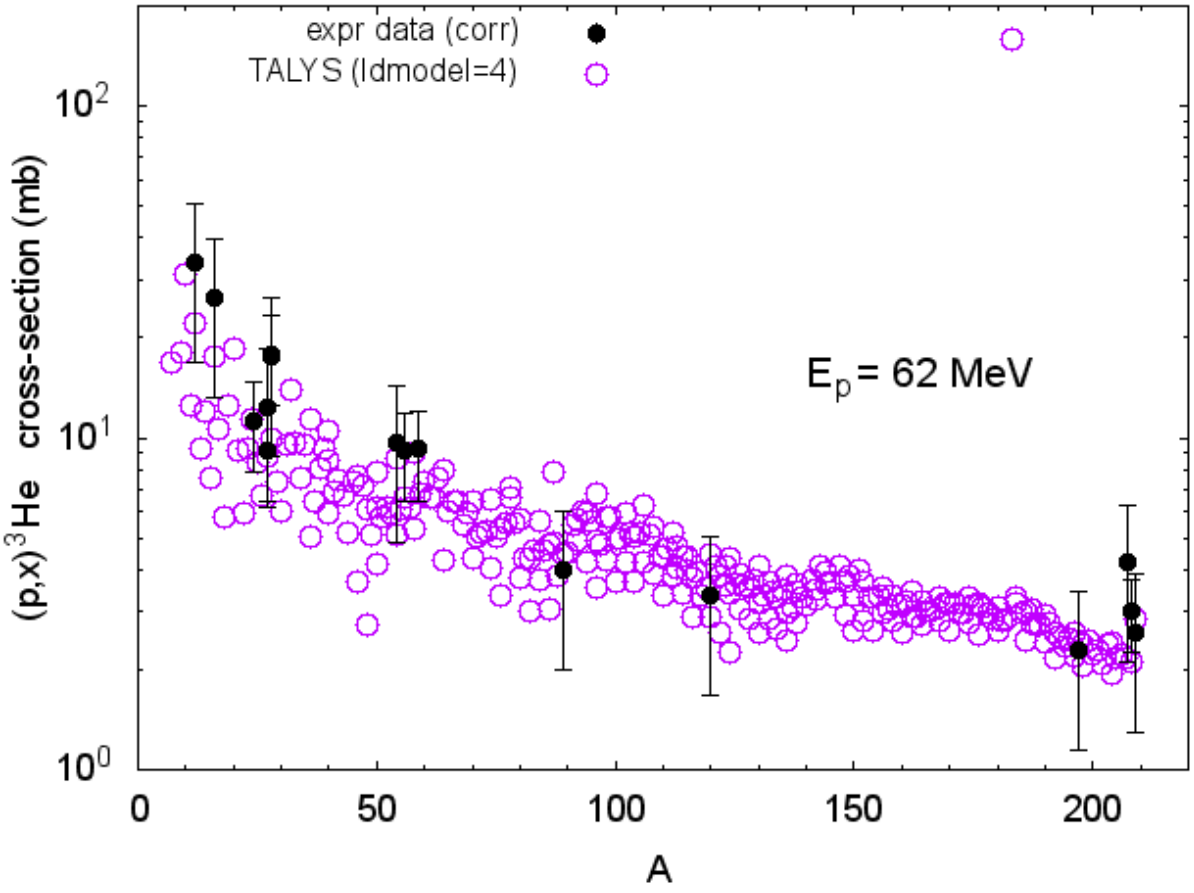

(p,x)3H cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
Ep = 150 MeV
expr data (corr)
TALYS (ldmodel=4)

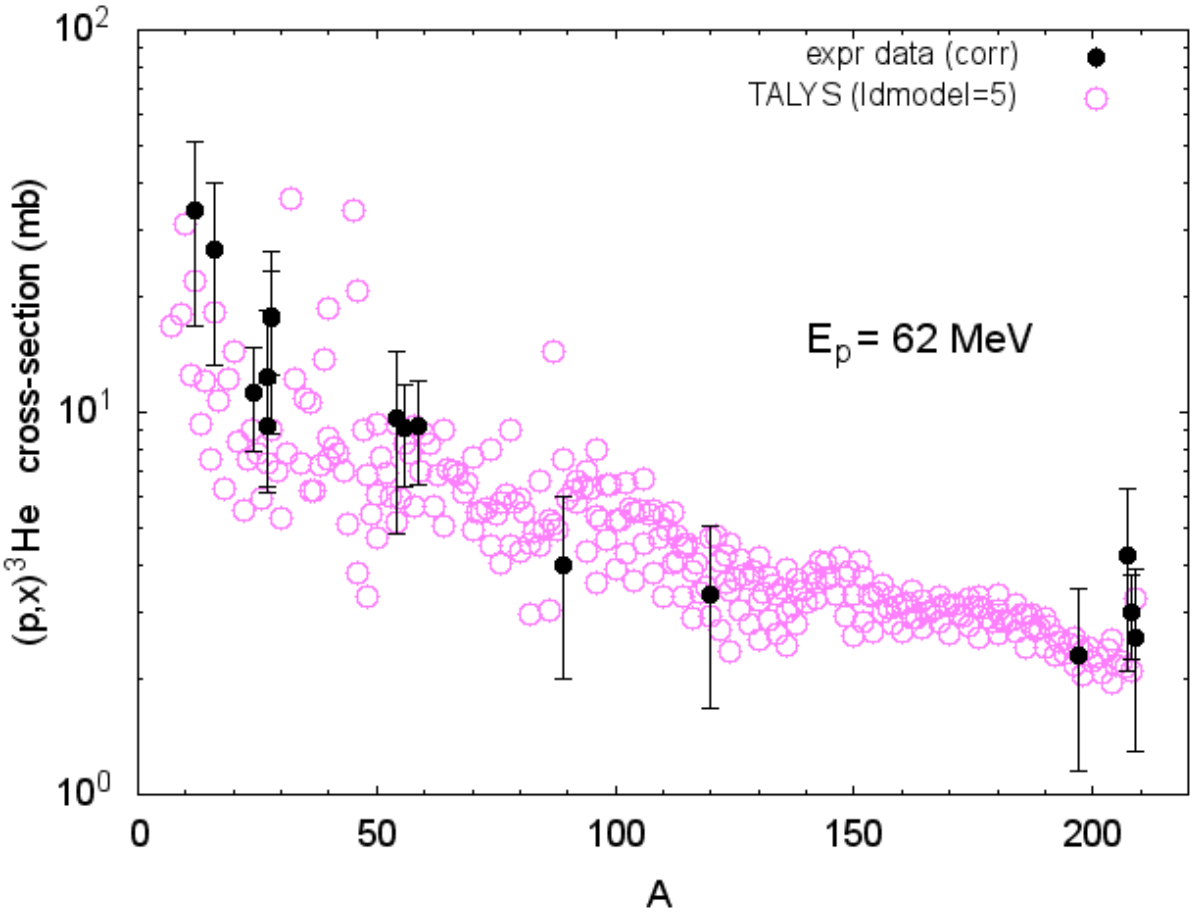

(p,x)3H cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
Ep = 150 MeV
expr data (corr)
TALYS (ldmodel=5)

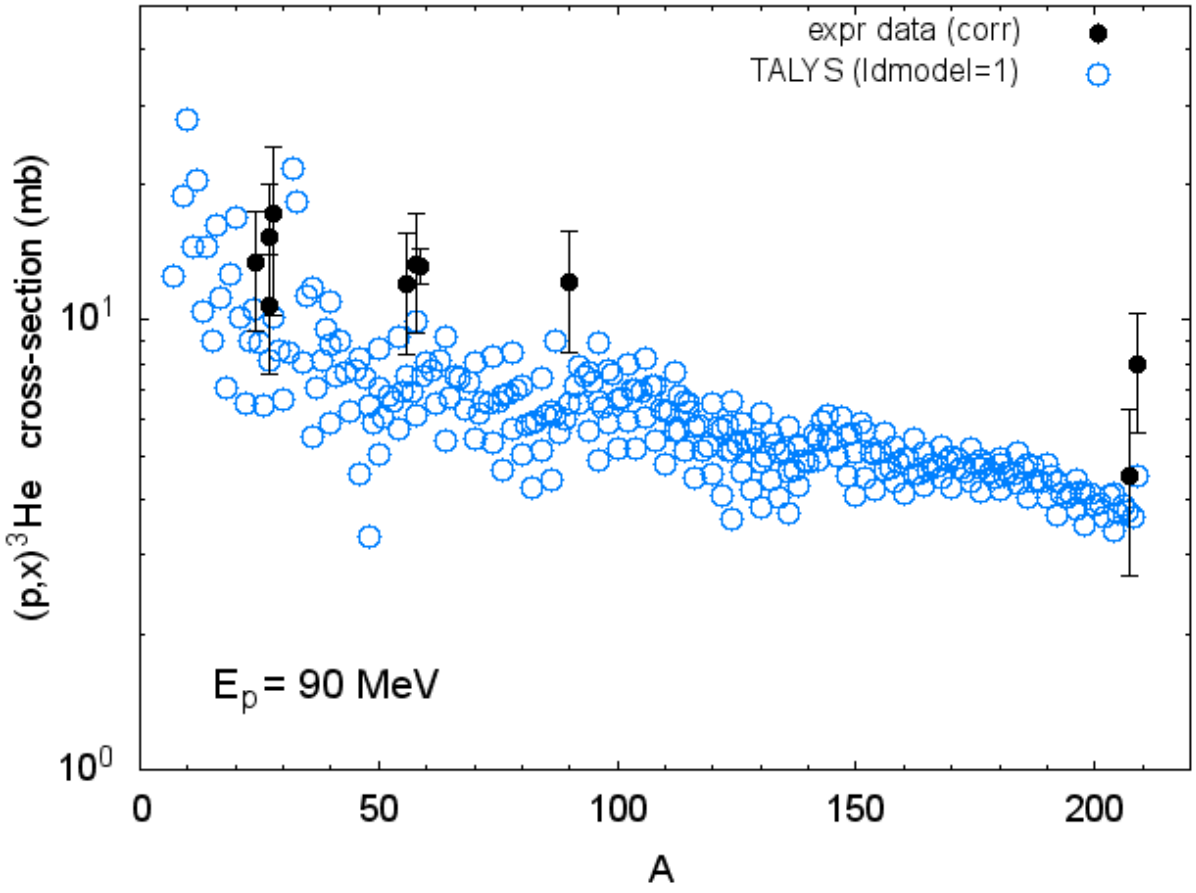

(p,x)3He cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
Ep = 62 MeV
expr data (corr)
TALYS (ldmodel=1)

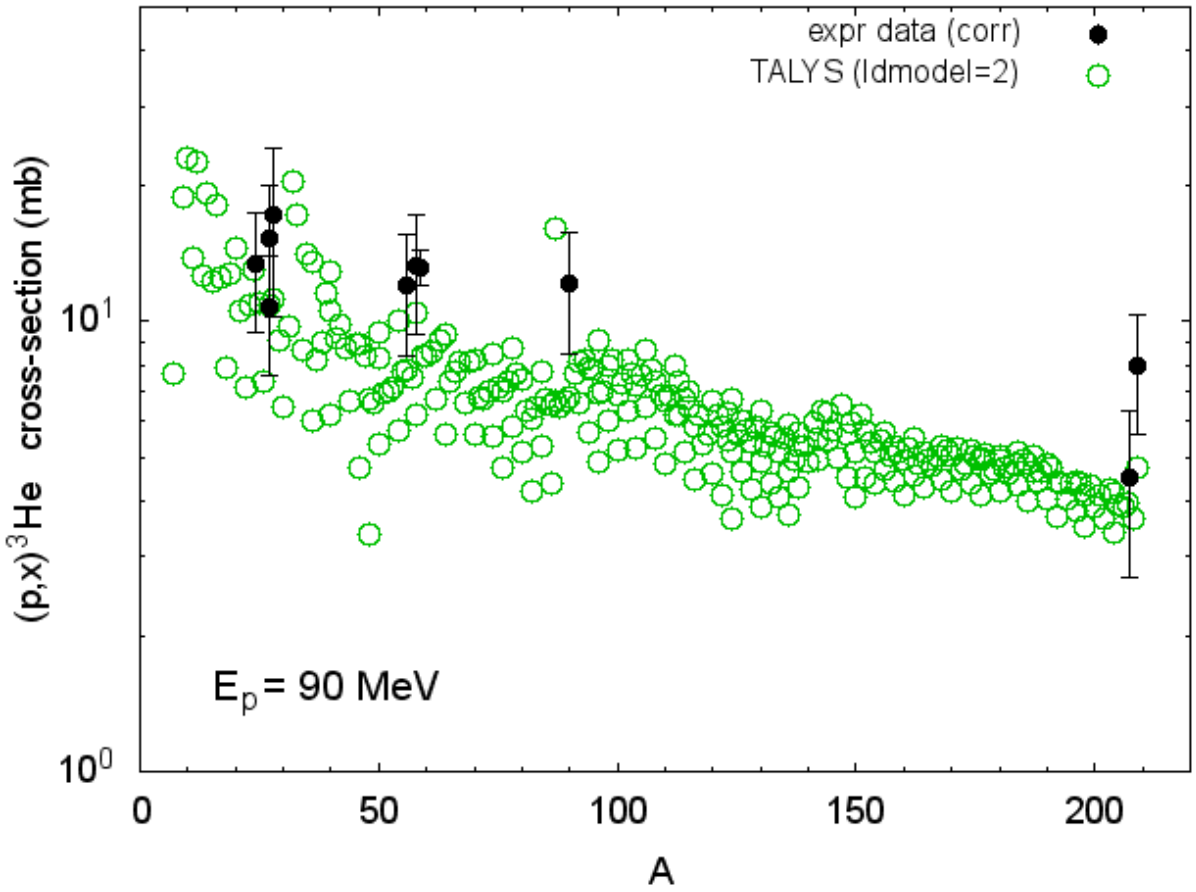

expr data (corr)
TALYS (ldmodel=2)
E_p = 62 MeV
(p,x)^{3}He cross-section (mb)
A
10^2
10^1
10^0
0
50
100
150
200

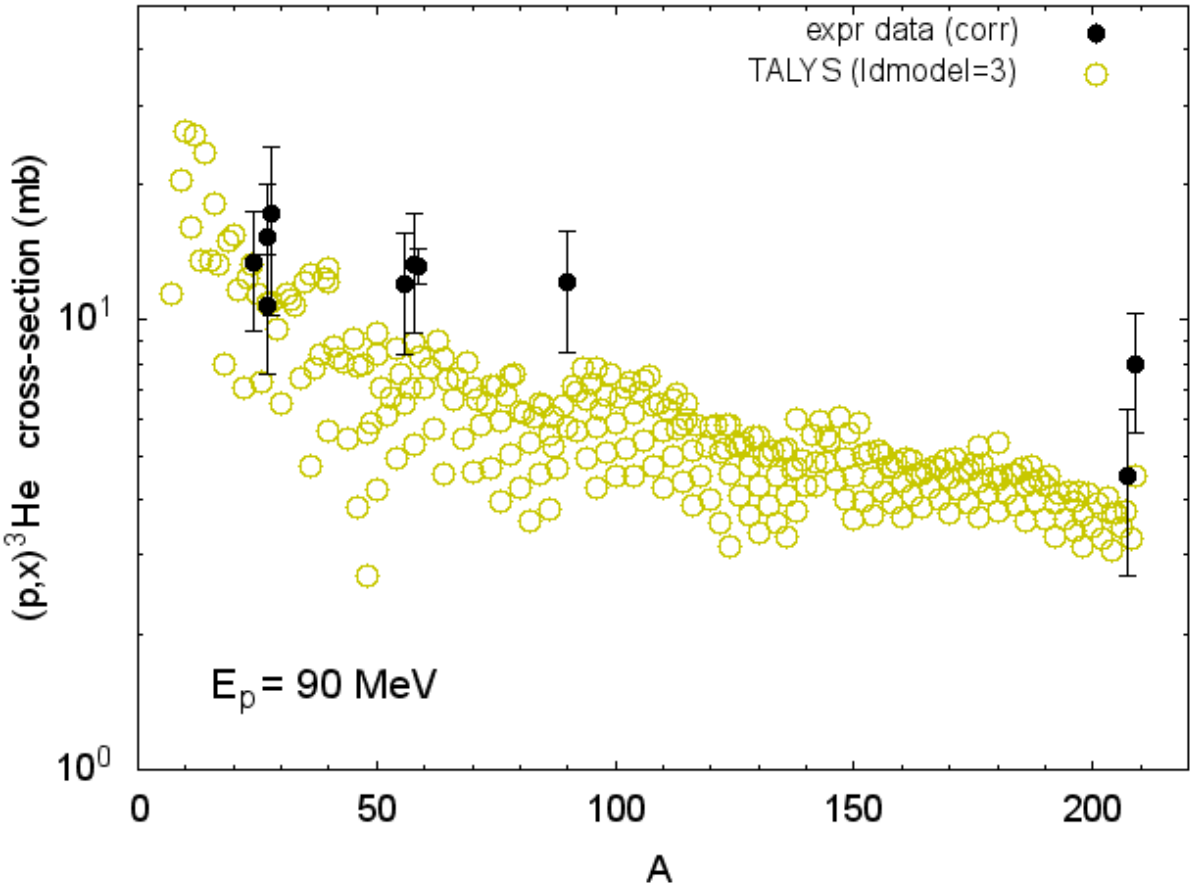

expr data (corr)
TALYS (ldmodel=3)
E_p = 62 MeV
(p,x)^{3}He cross-section (mb)
A
10^2
10^1
10^0
0
50
100
150
200

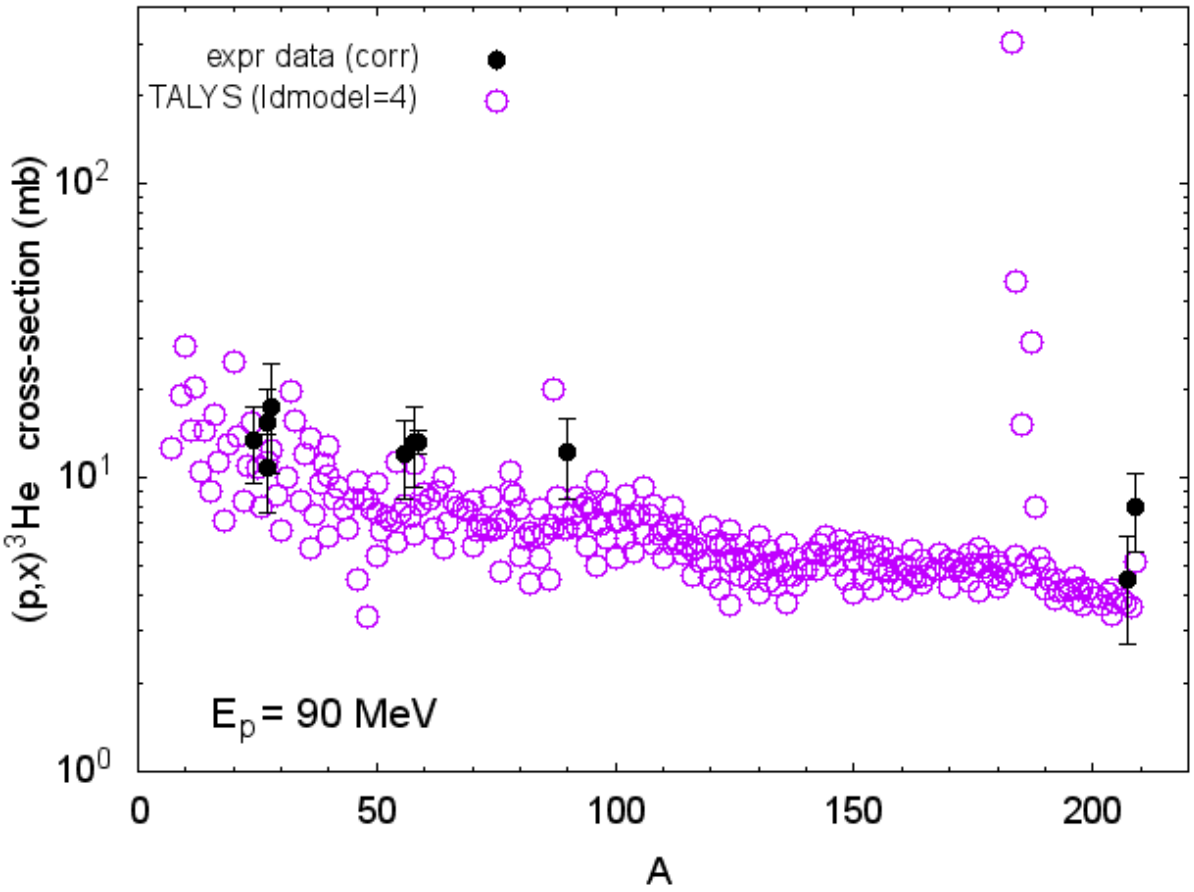

expr data (corr)
TALYS (ldmodel=4)
E_p = 62 MeV
$(p,x)^3He$ cross-section (mb)
A
10^2
10^1
10^0
0
50
100
150
200

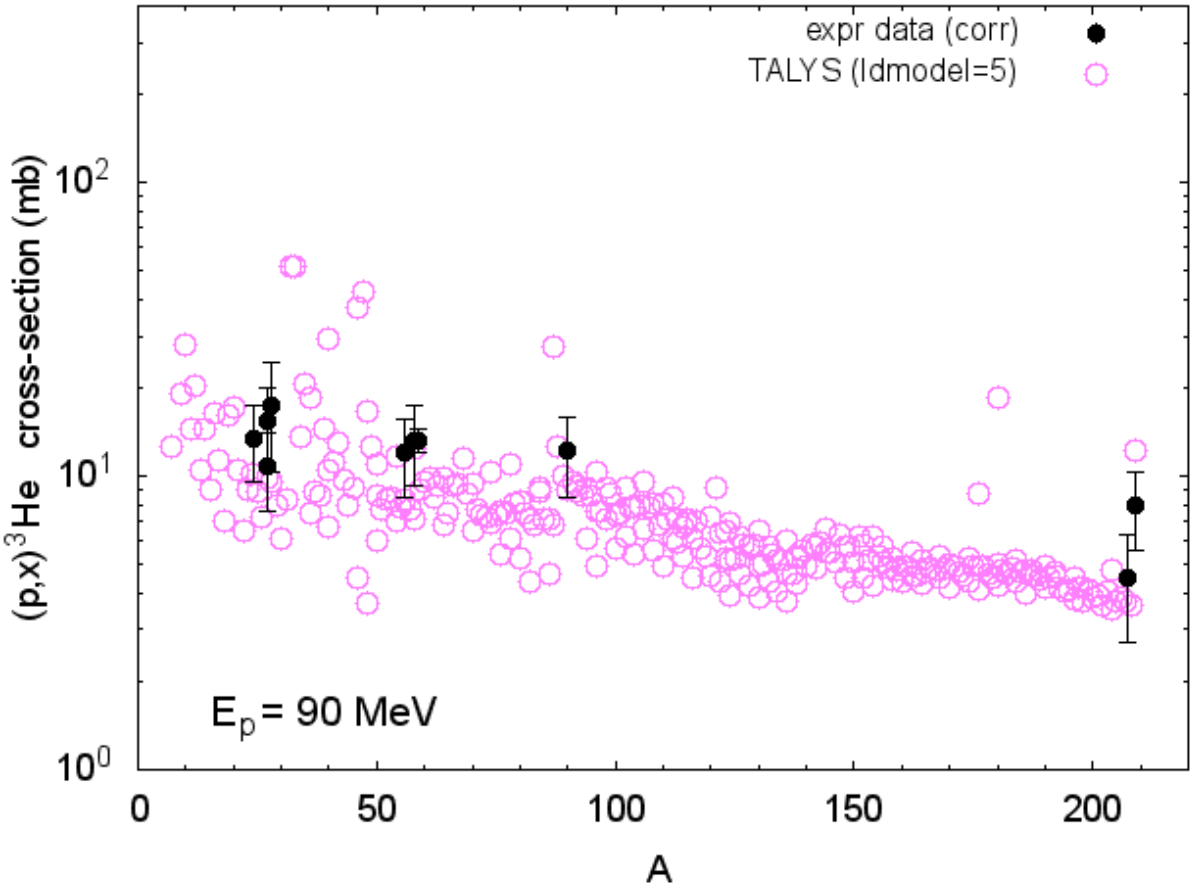

expr data (corr)
TALYS (ldmodel=5)
E_p = 62 MeV
$(p,x)^3He$ cross-section (mb)
A
10^2
10^1
10^0
0
50
100
150
200

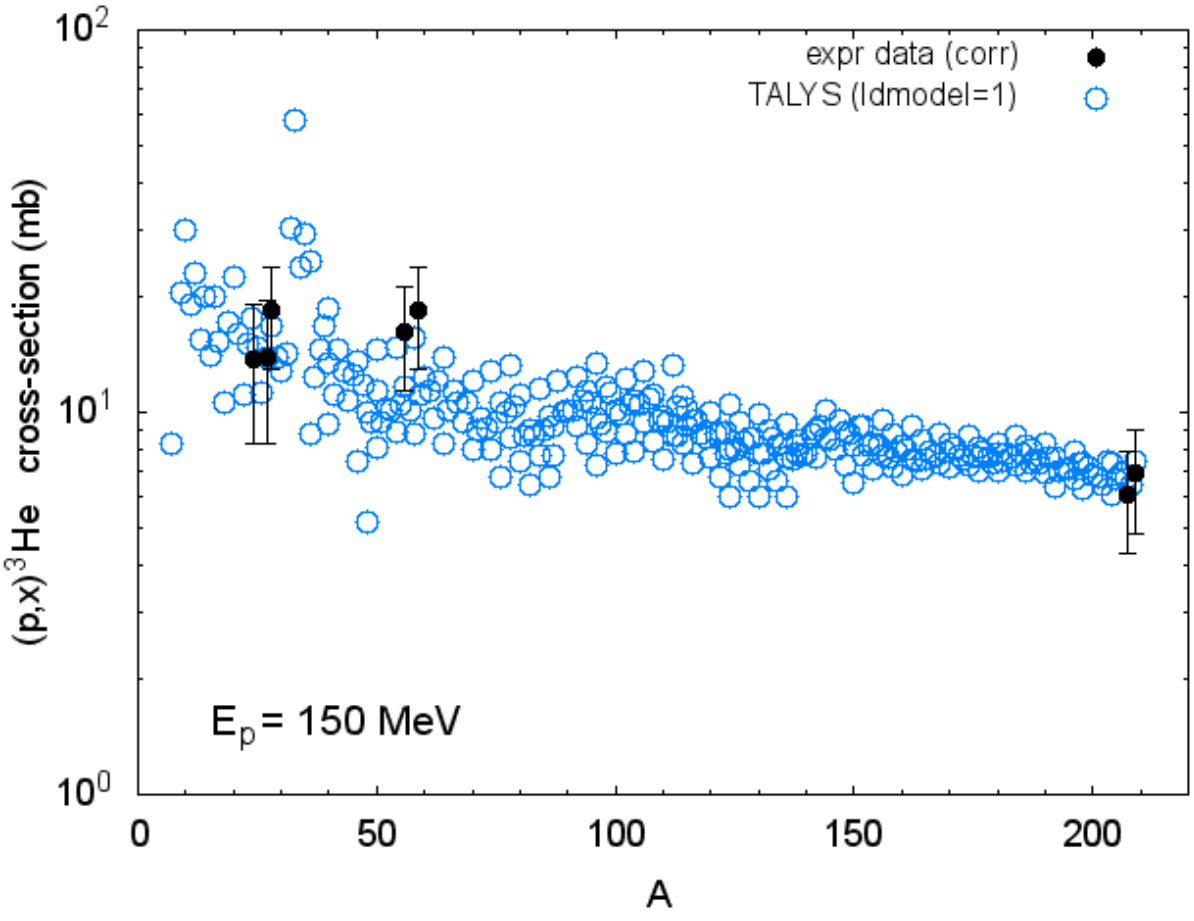

expr data (corr)
TALYS (ldmodel=1)
(p,x)3He cross-section (mb)
10^1
10^0
Ep = 90 MeV
0
50
100
150
200
A

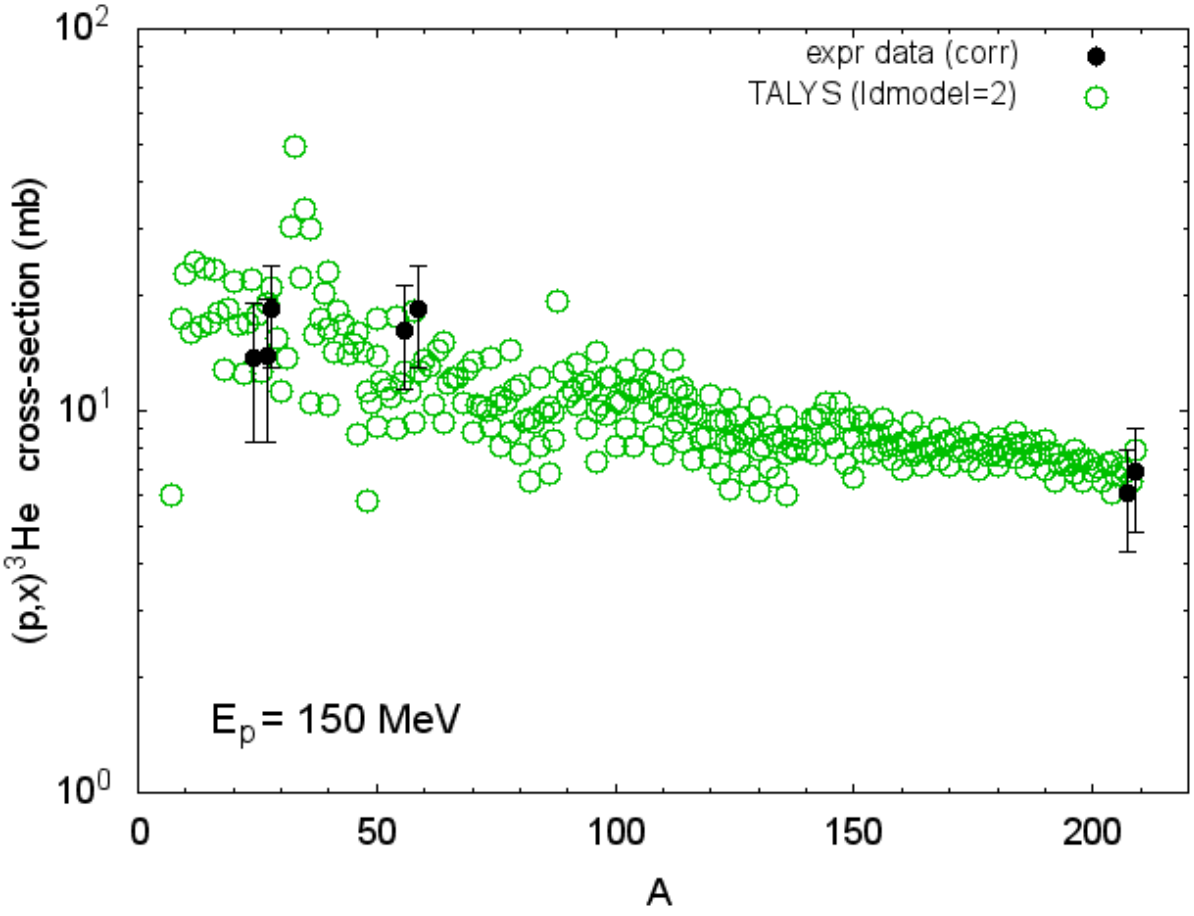

expr data (corr)
TALYS (ldmodel=2)
(p,x)3He cross-section (mb)
10^1
10^0
Ep = 90 MeV
0
50
100
150
200
A

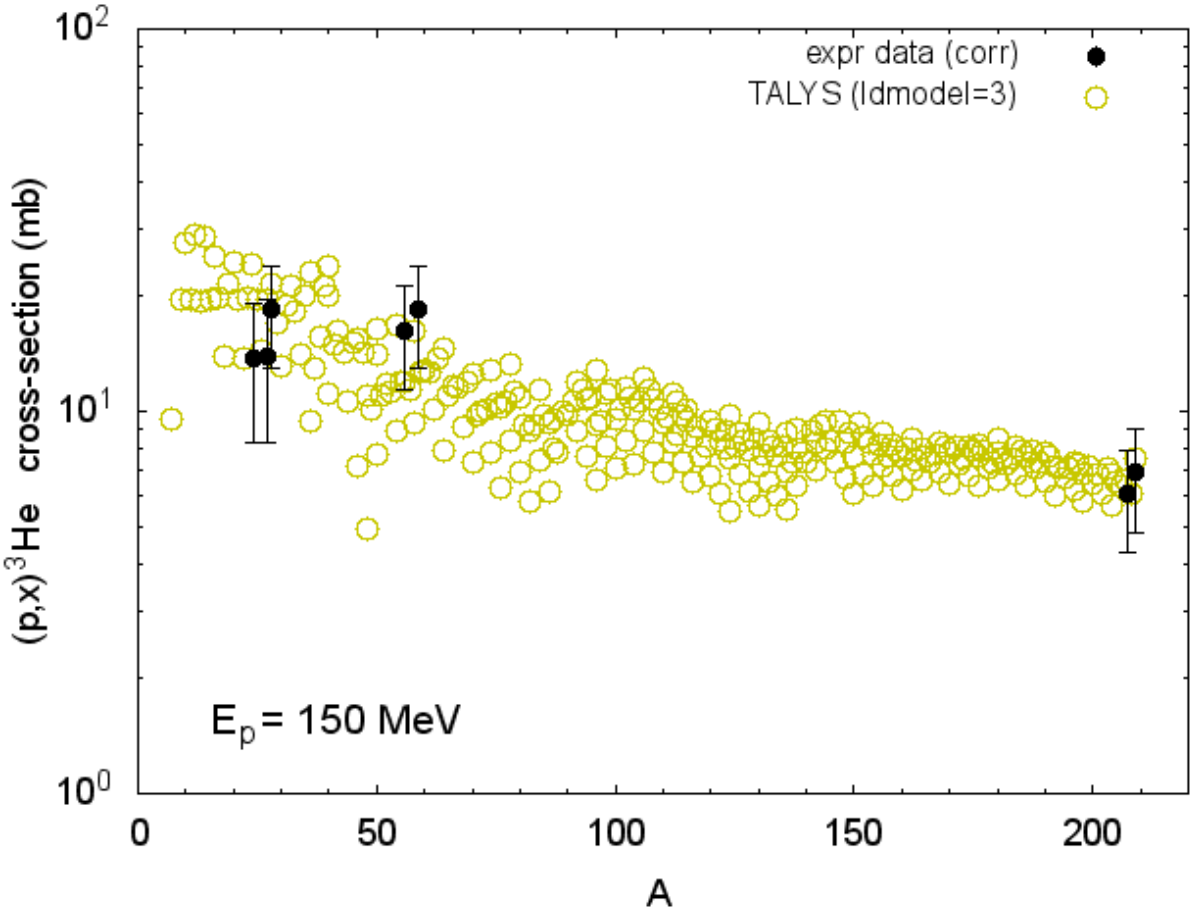

expr data (corr)
TALYS (ldmodel=3)
(p,x)3He cross-section (mb)
10^1
10^0
E_p = 90 MeV
0
50
100
150
200
A

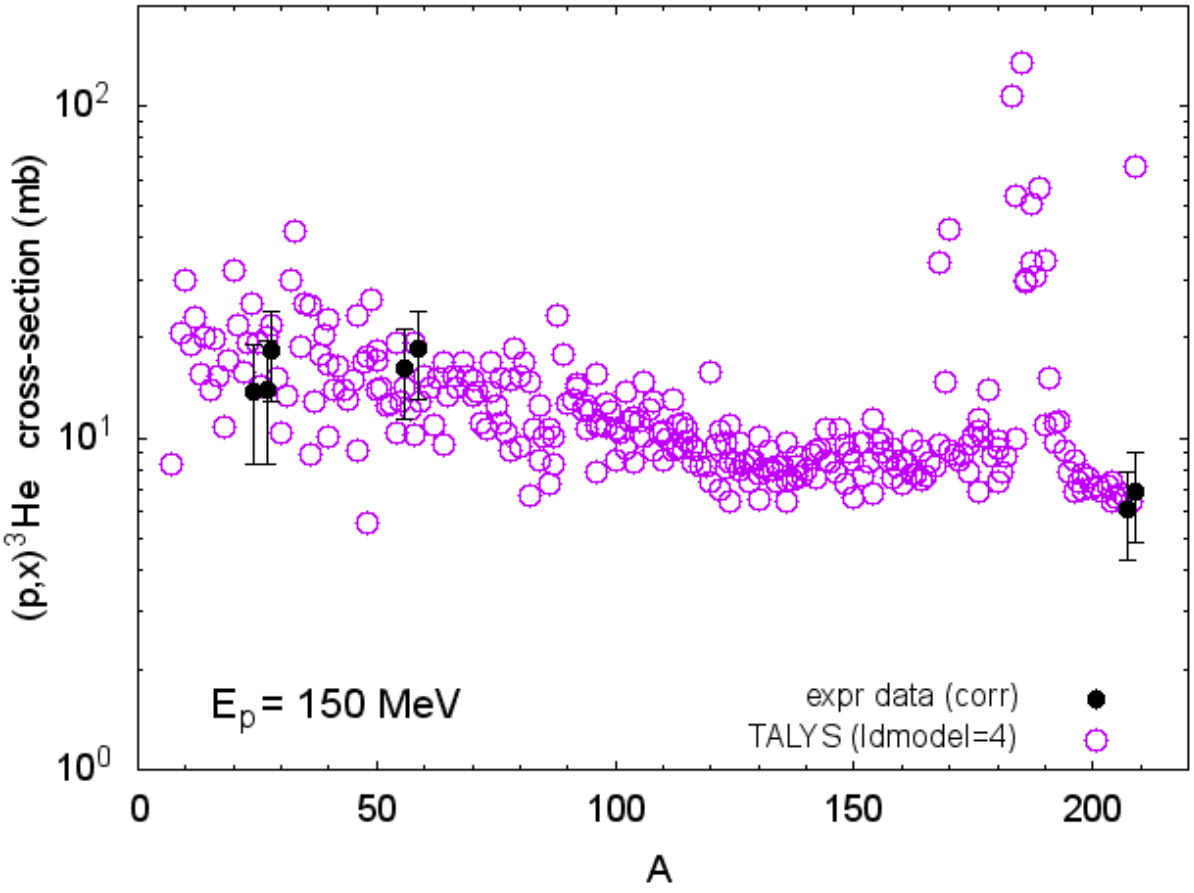

expr data (corr)
TALYS (ldmodel=4)
(p,x)3He cross-section (mb)
10^2
10^1
10^0
E_p = 90 MeV
0
50
100
150
200
A

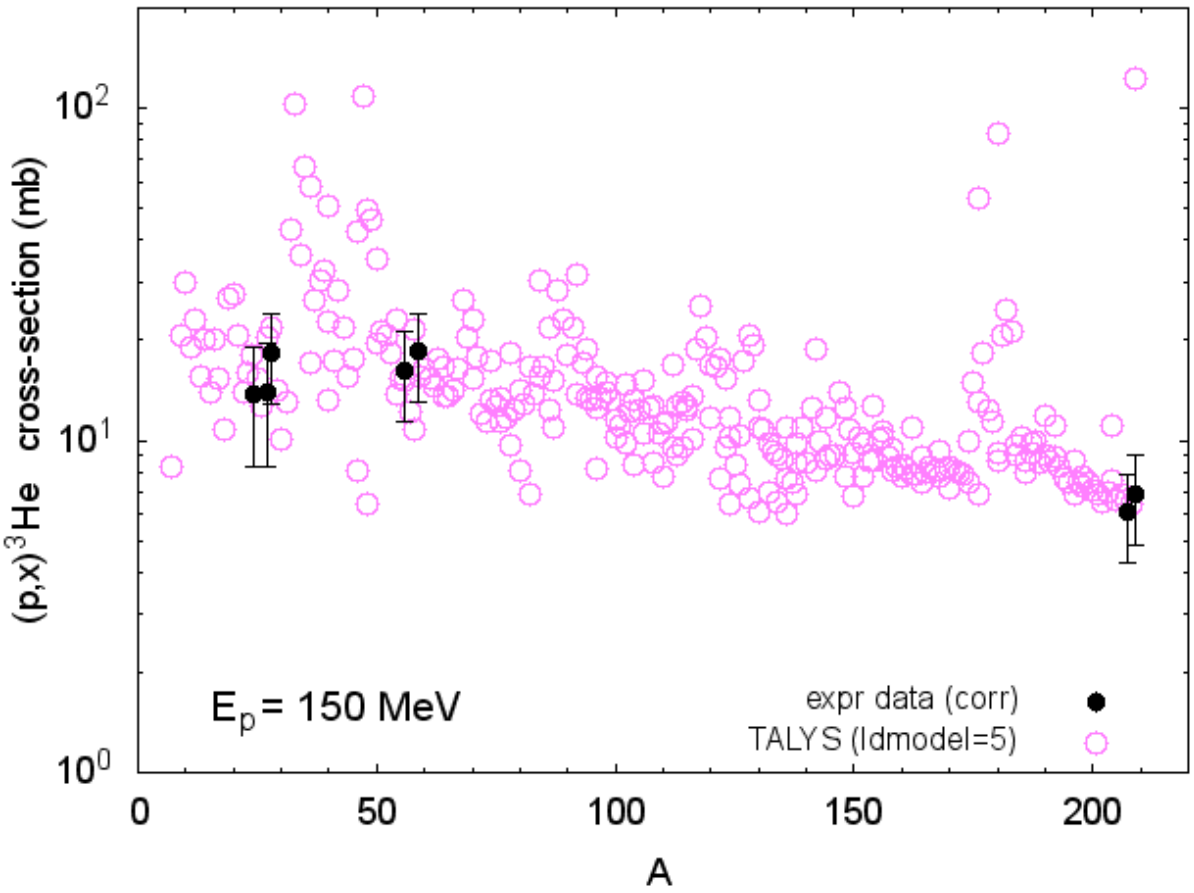

expr data (corr)
TALYS (ldmodel=5)
(p,x)3He cross-section (mb)
10^2
10^1
10^0
Ep = 90 MeV
0
50
100
150
200
A

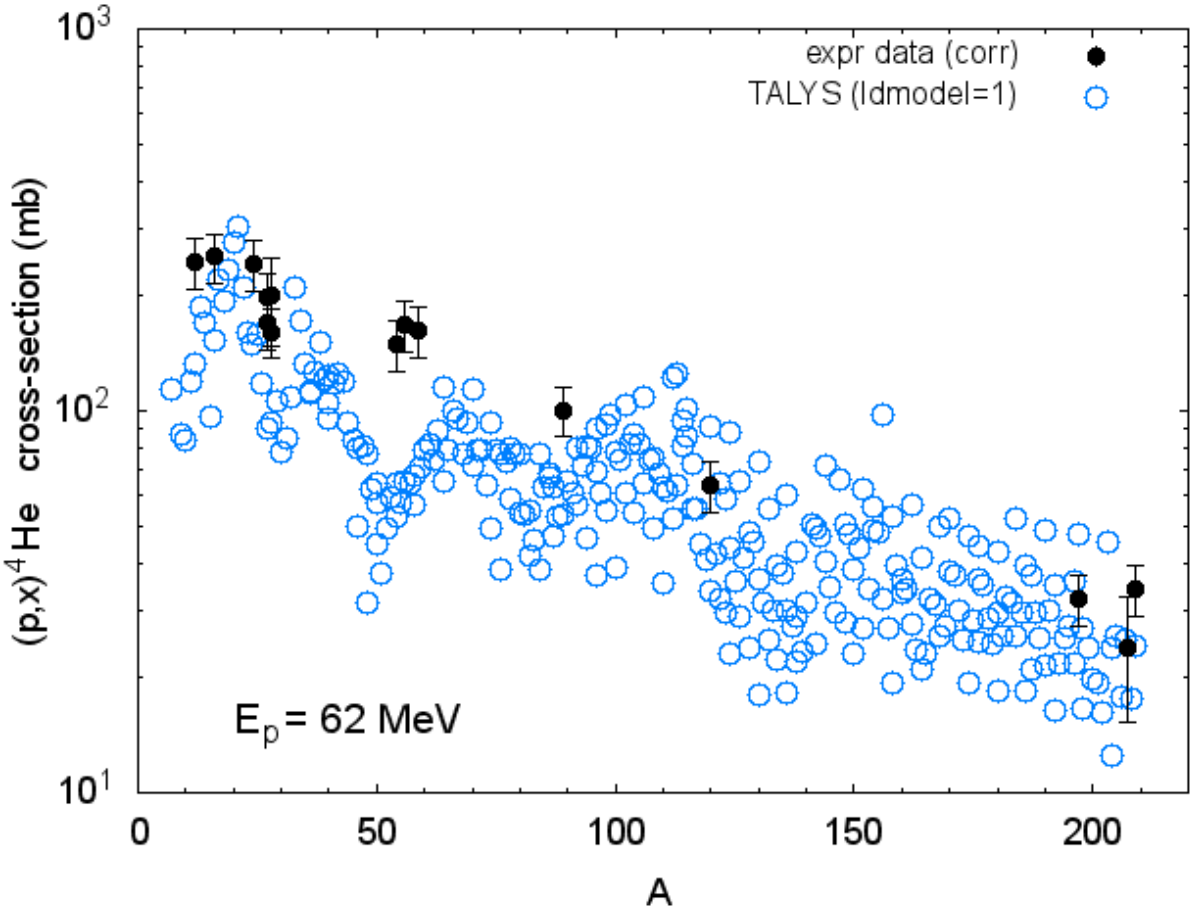

expr data (corr)
TALYS (ldmodel=1)
(p,x)3He cross-section (mb)
10^2
10^1
10^0
Ep = 150 MeV
0
50
100
150
200
A

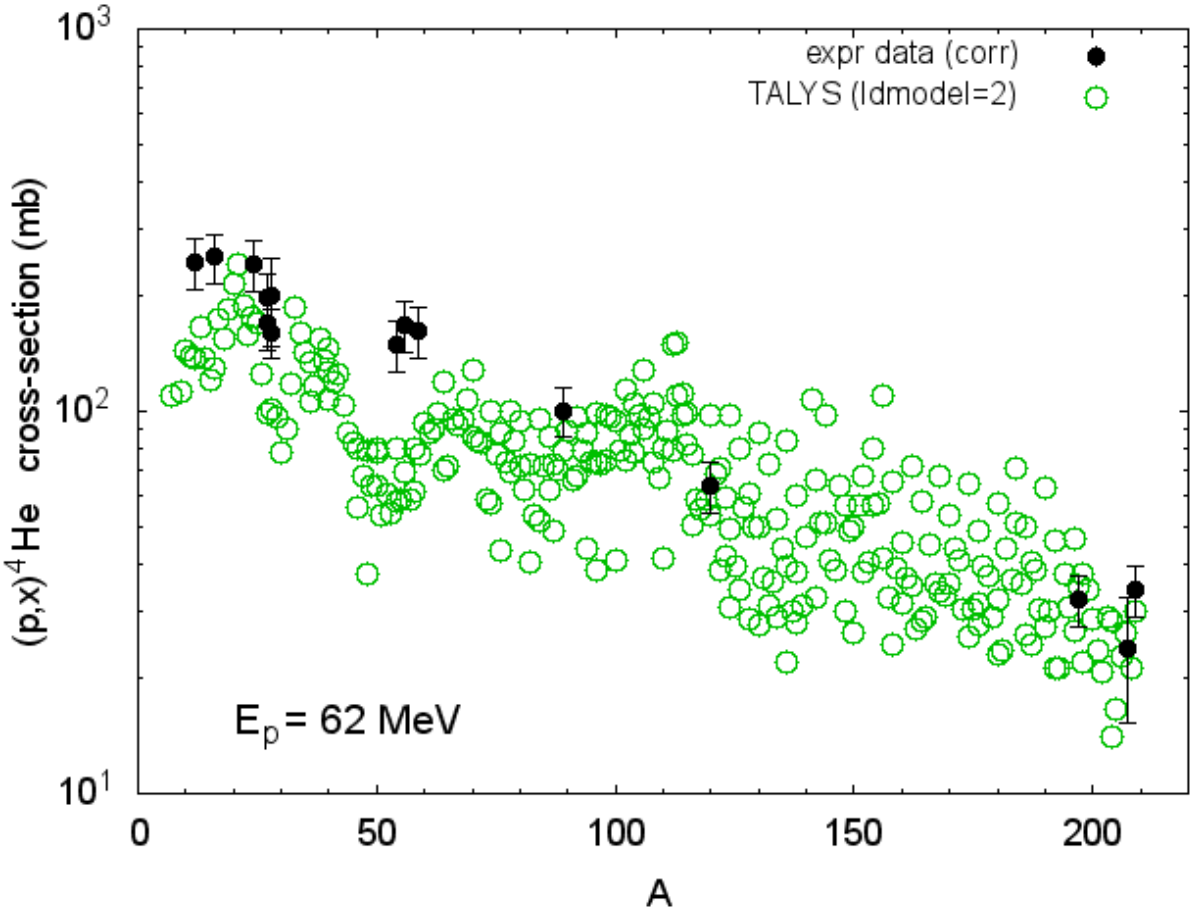

expr data (corr)
TALYS (ldmodel=2)
10^2
10^1
10^0
(p,x)^{3}He cross-section (mb)
E_p = 150 MeV
0
50
100
150
200
A

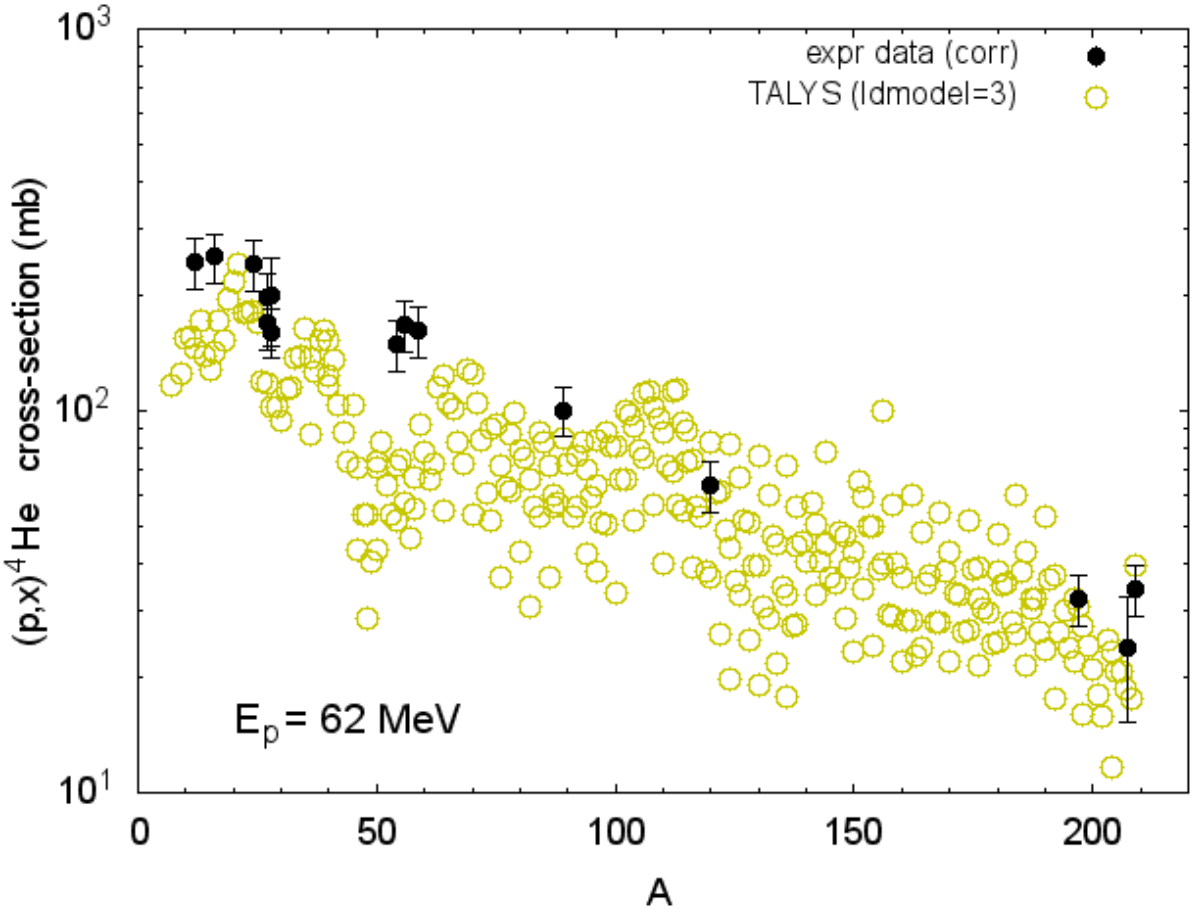

expr data (corr)
TALYS (ldmodel=3)
10^2
10^1
10^0
(p,x)^{3}He cross-section (mb)
E_p = 150 MeV
0
50
100
150
200
A

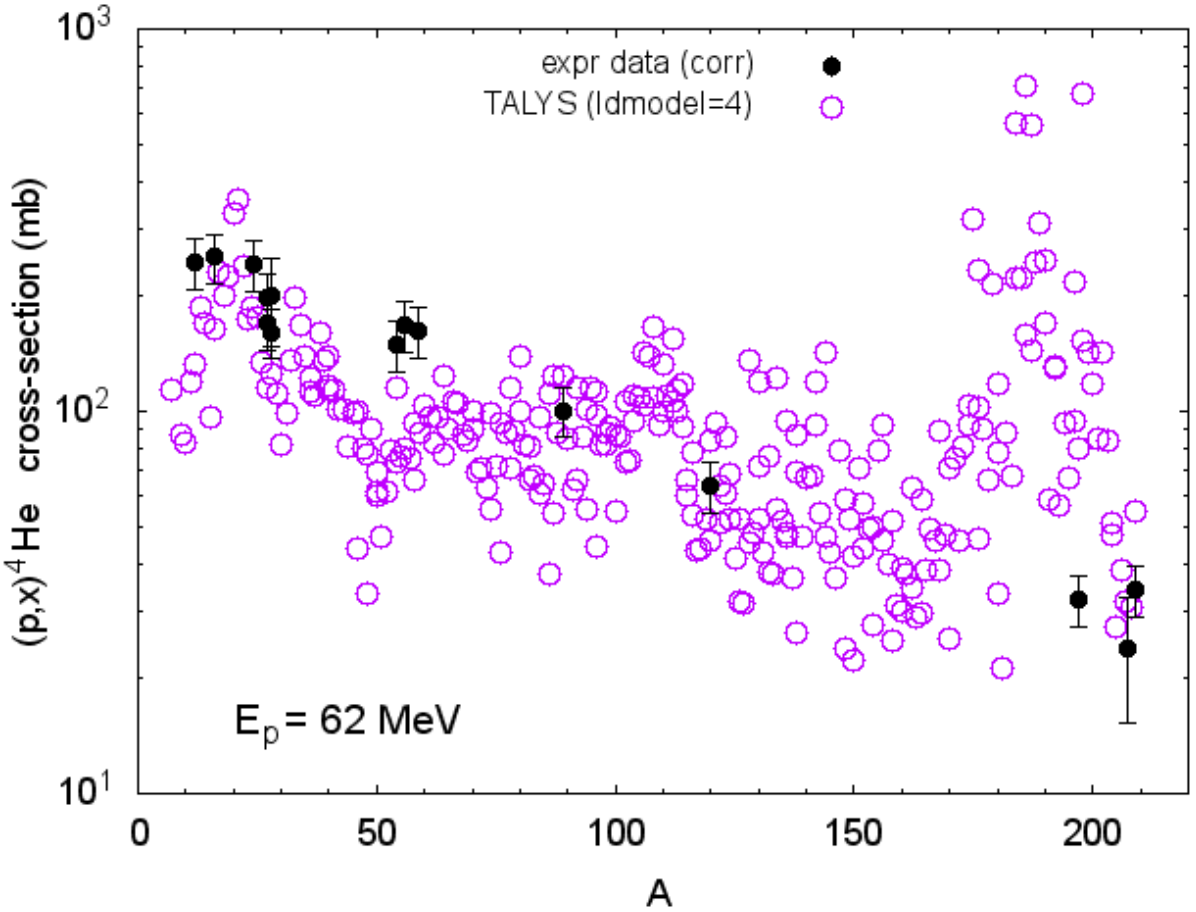

(p,x)3He cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
Ep = 150 MeV
expr data (corr)
TALYS (ldmodel=4)

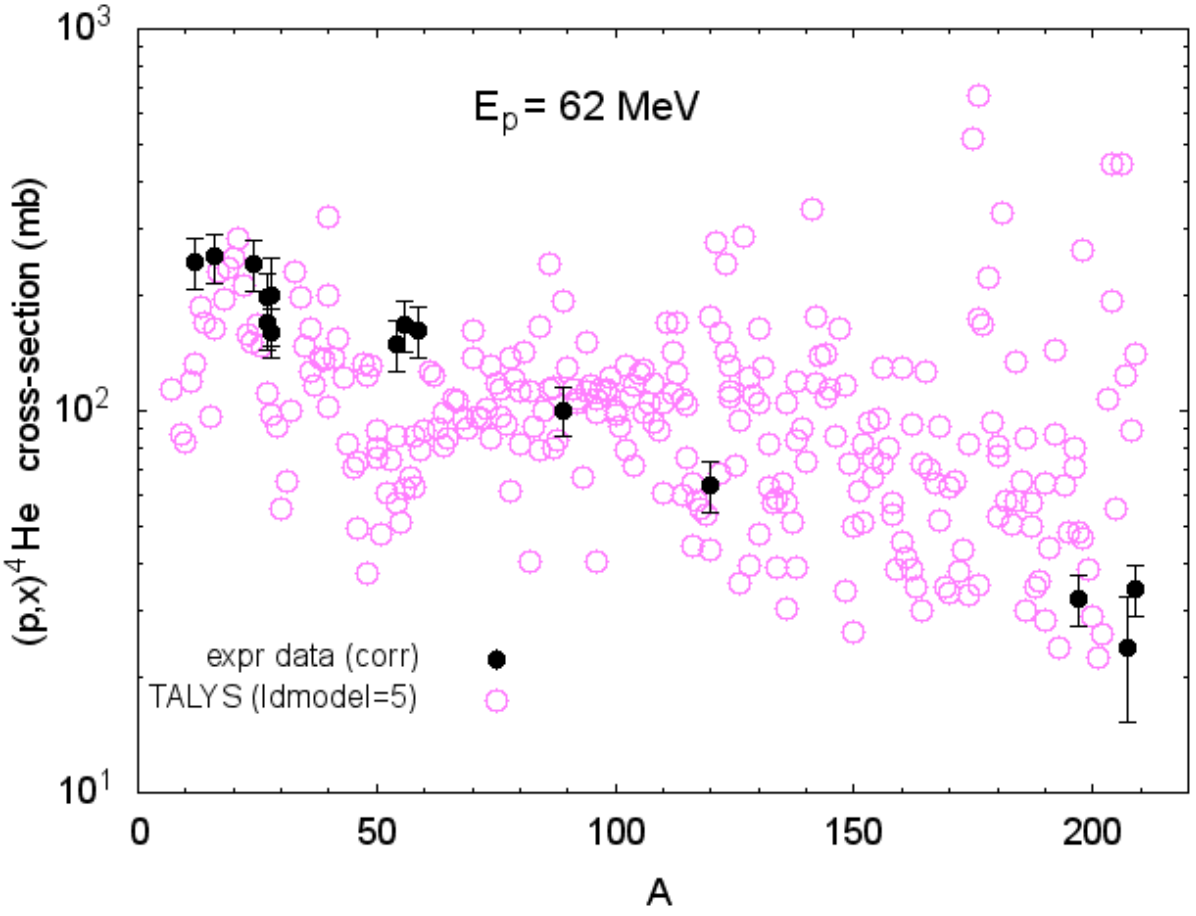

(p,x)3He cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
Ep = 150 MeV
expr data (corr)
TALYS (ldmodel=5)

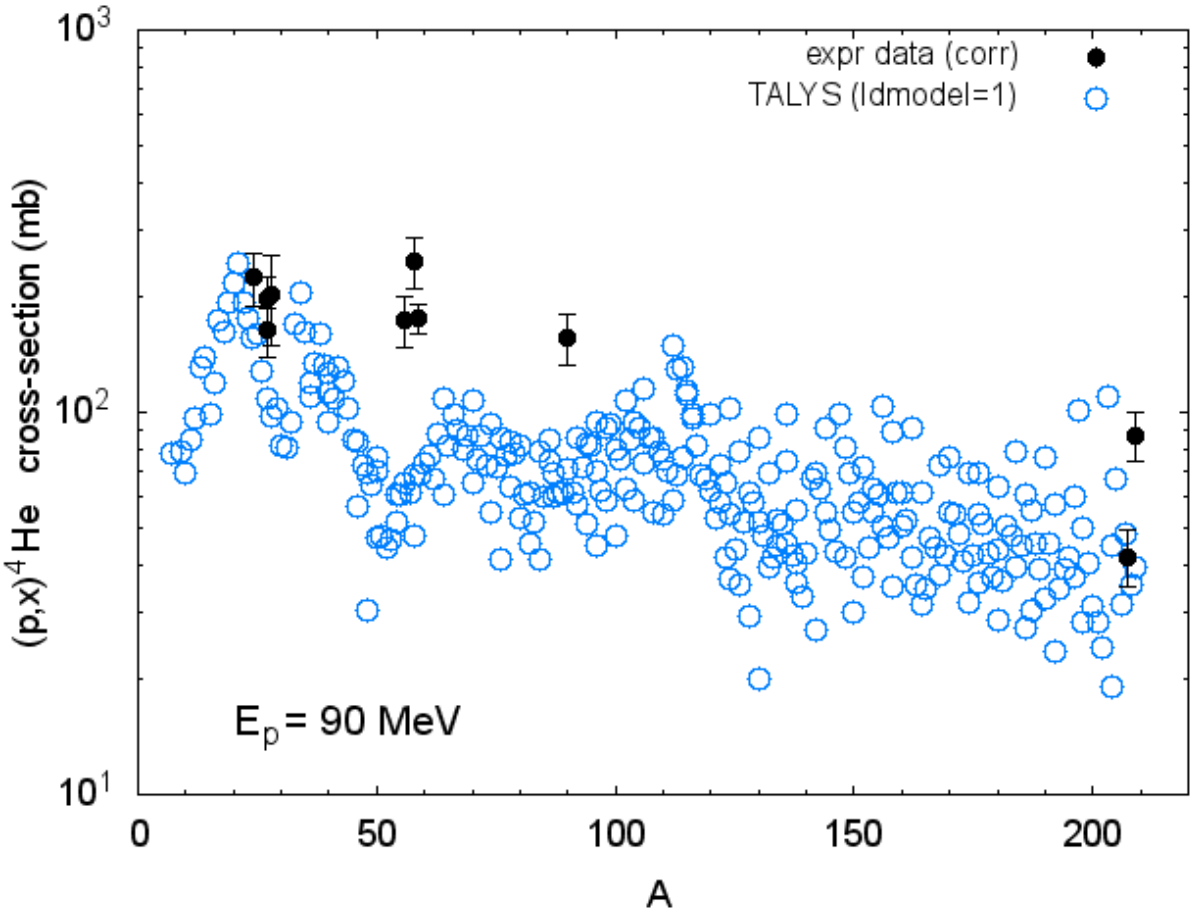

expr data (corr)
TALYS (ldmodel=1)
10^3
10^2
10^1
(p,x)^{4}He cross-section (mb)
E_p = 62 MeV
0
50
100
150
200
A

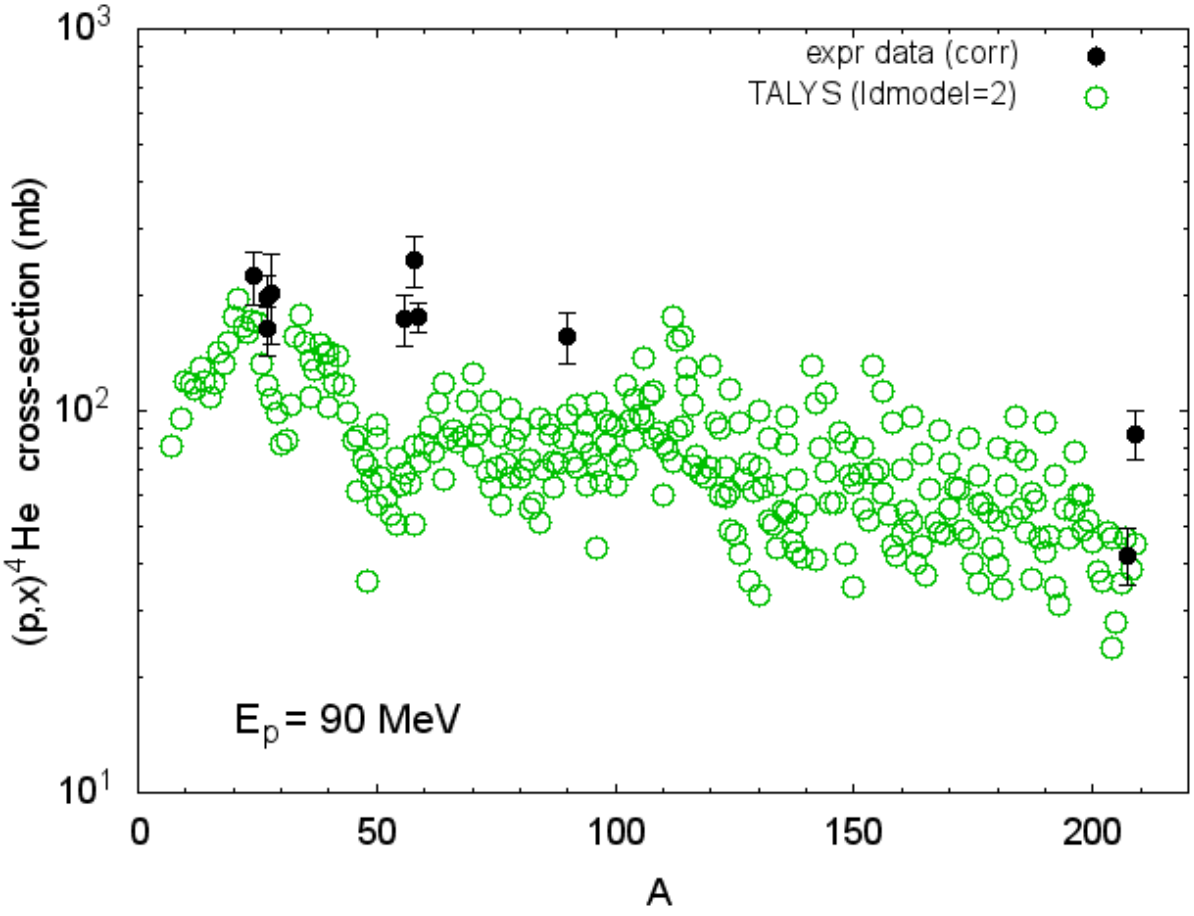

expr data (corr)
TALYS (ldmodel=2)
10^3
10^2
10^1
(p,x)^{4}He cross-section (mb)
E_p = 62 MeV
0
50
100
150
200
A

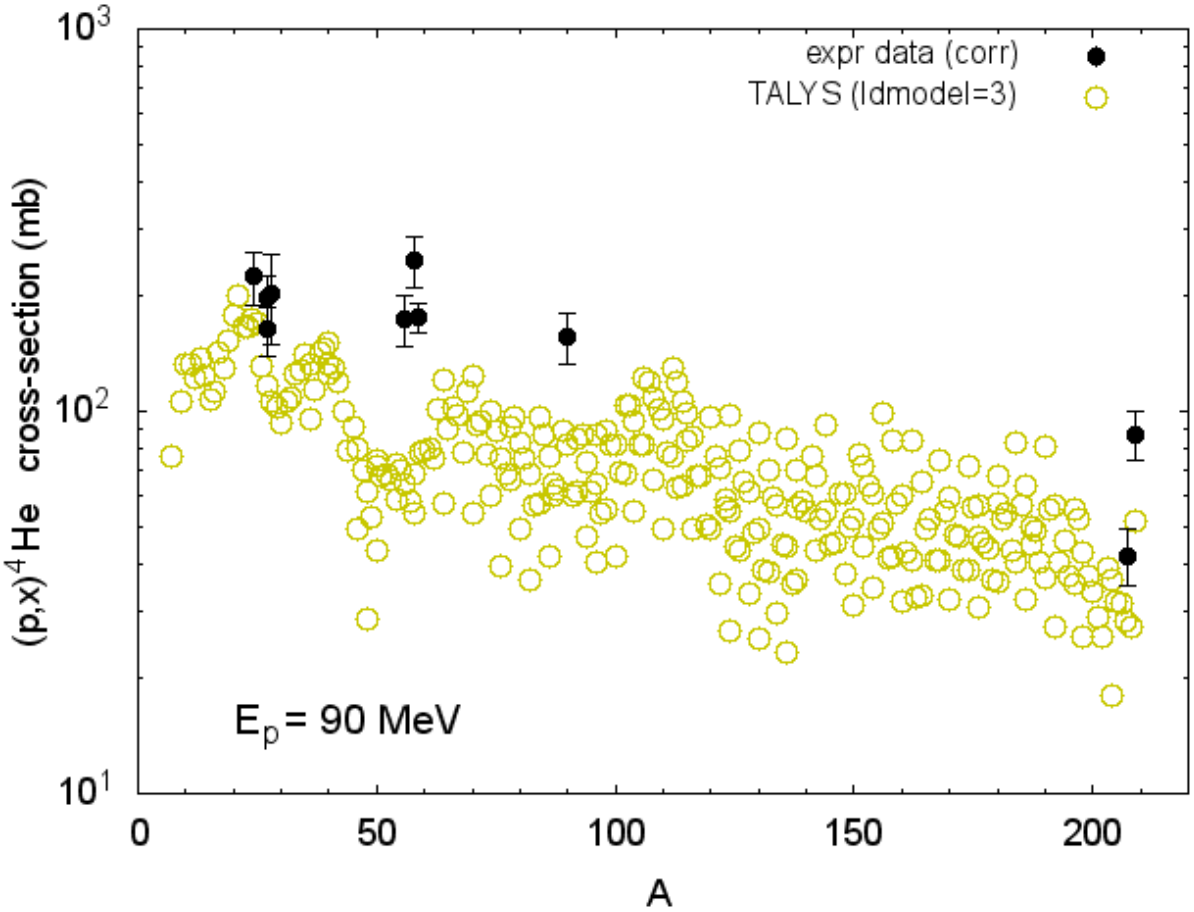

expr data (corr)
TALYS (ldmodel=3)
(p,x)4He cross-section (mb)
Ep = 62 MeV
A

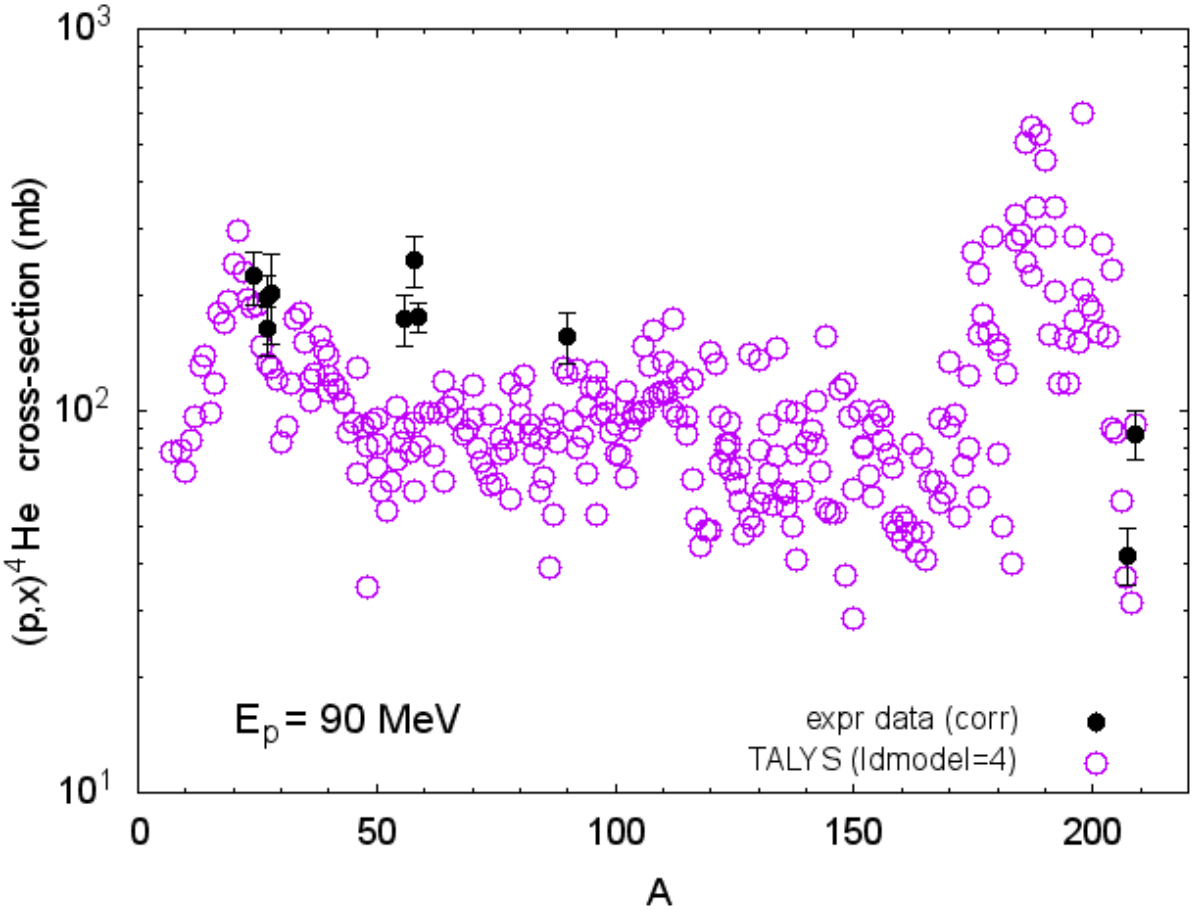

expr data (corr)
TALYS (ldmodel=4)
(p,x)4He cross-section (mb)
Ep = 62 MeV
A

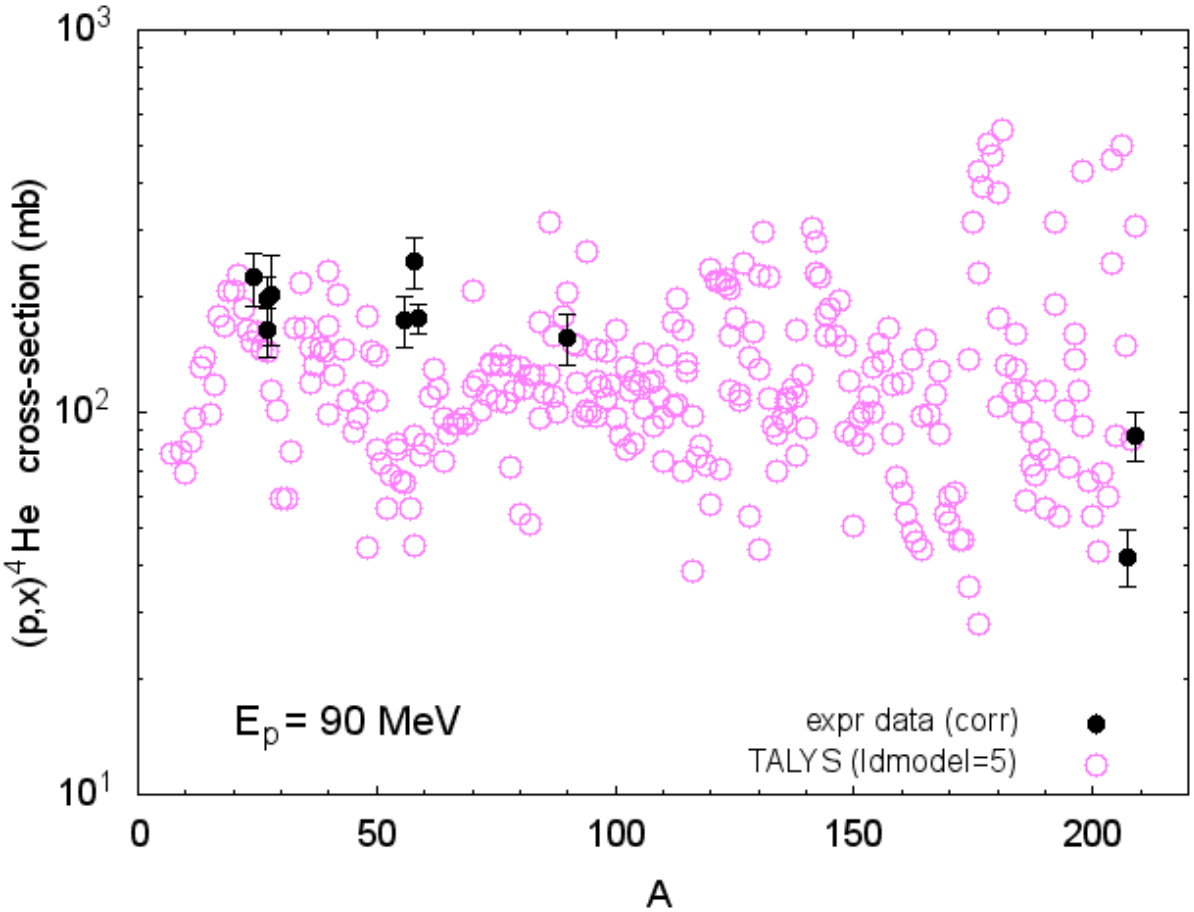

E_p = 62 MeV
expr data (corr)
TALYS (ldmodel=5)
$(p,x)^4$He cross-section (mb)
A
10^3
10^2
10^1
0
50
100
150
200

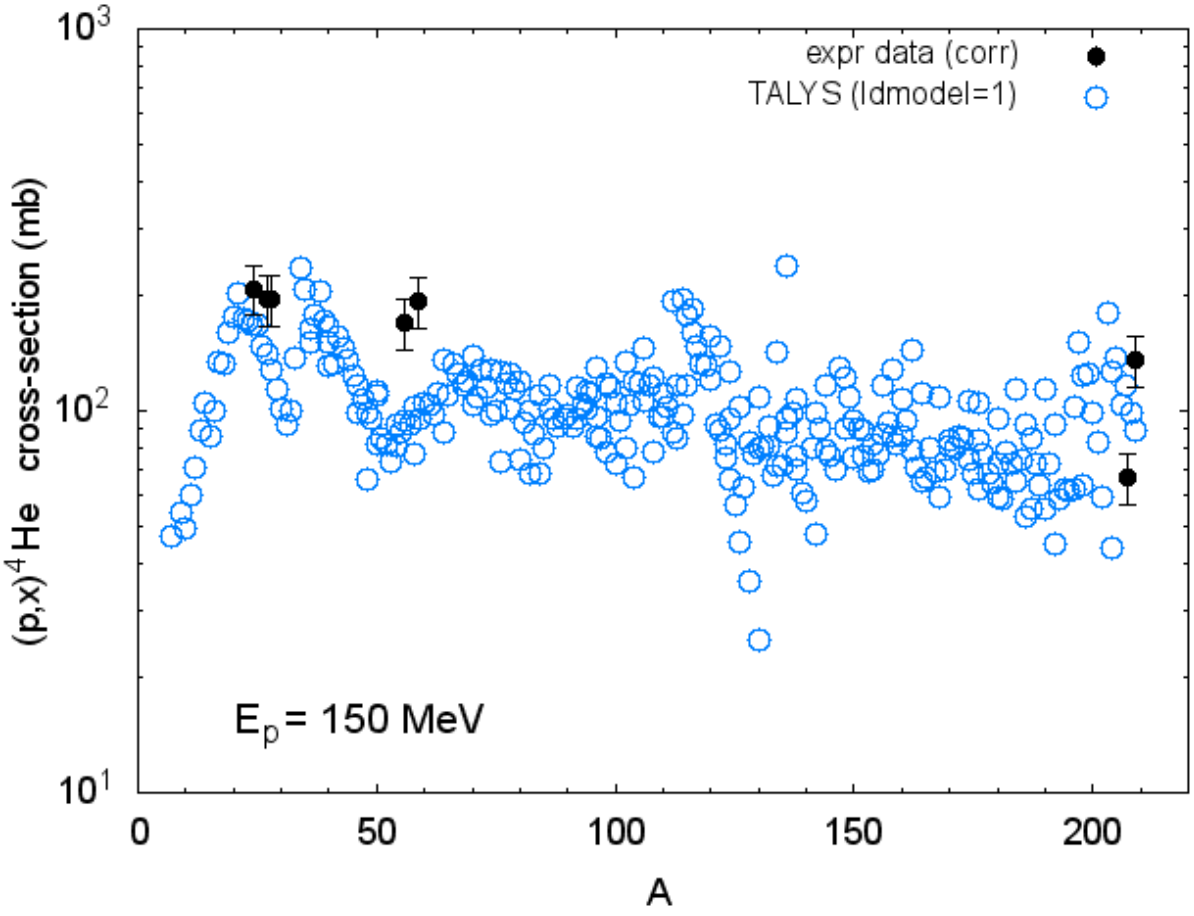

expr data (corr)
TALYS (ldmodel=1)
E_p = 90 MeV
$(p,x)^4$He cross-section (mb)
A
10^3
10^2
10^1
0
50
100
150
200

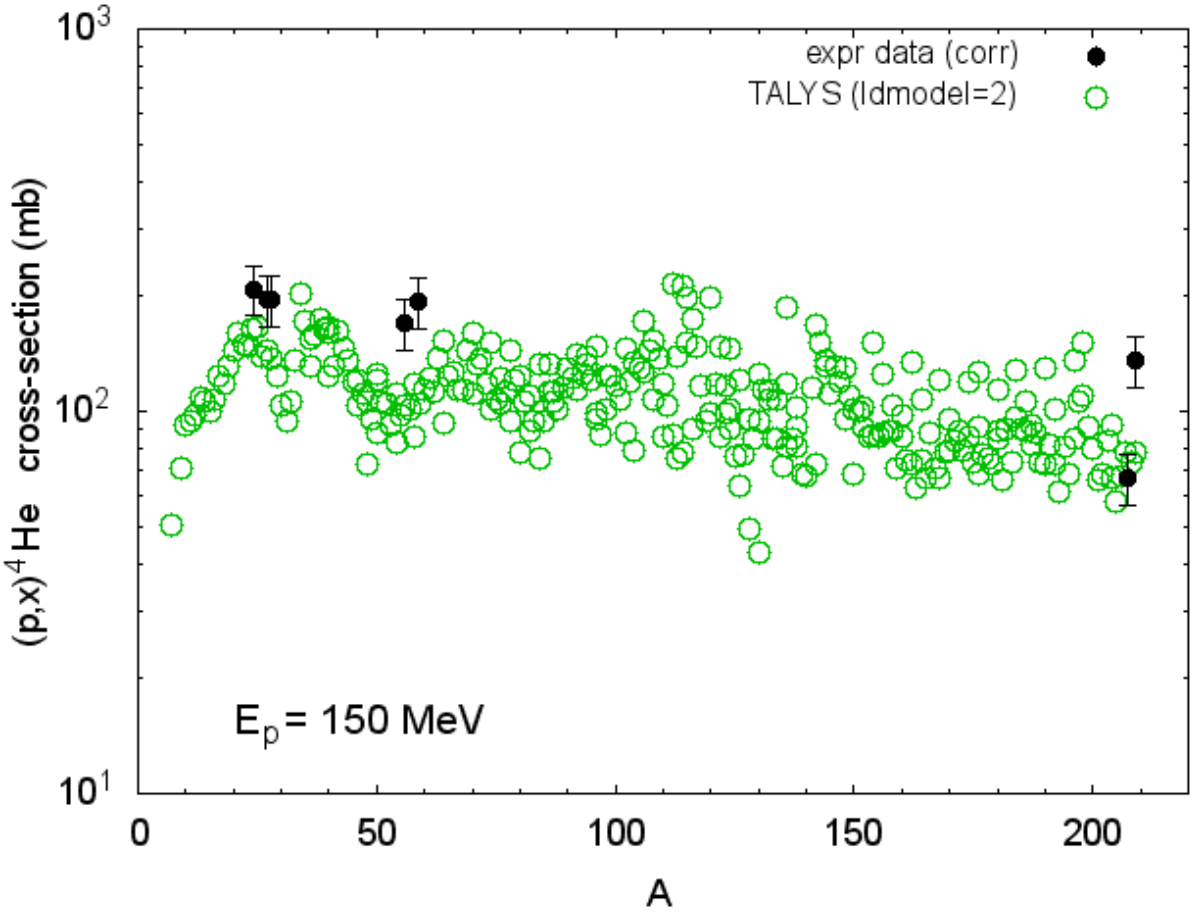

expr data (corr)
TALYS (ldmodel=2)
E_p = 90 MeV
(p,x)^{4}He cross-section (mb)
A
10^3
10^2
10^1
0
50
100
150
200

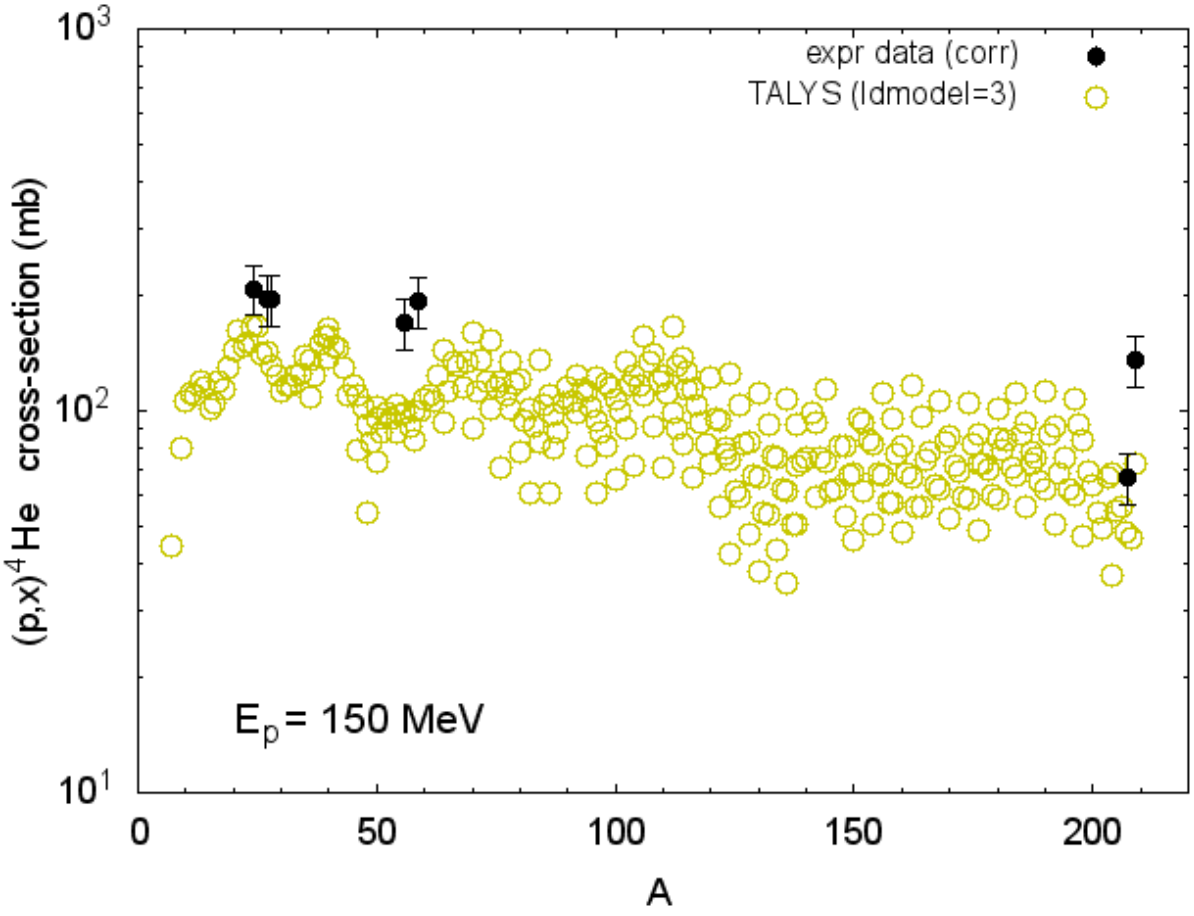

expr data (corr)
TALYS (ldmodel=3)
E_p = 90 MeV
(p,x)^{4}He cross-section (mb)
A
10^3
10^2
10^1
0
50
100
150
200

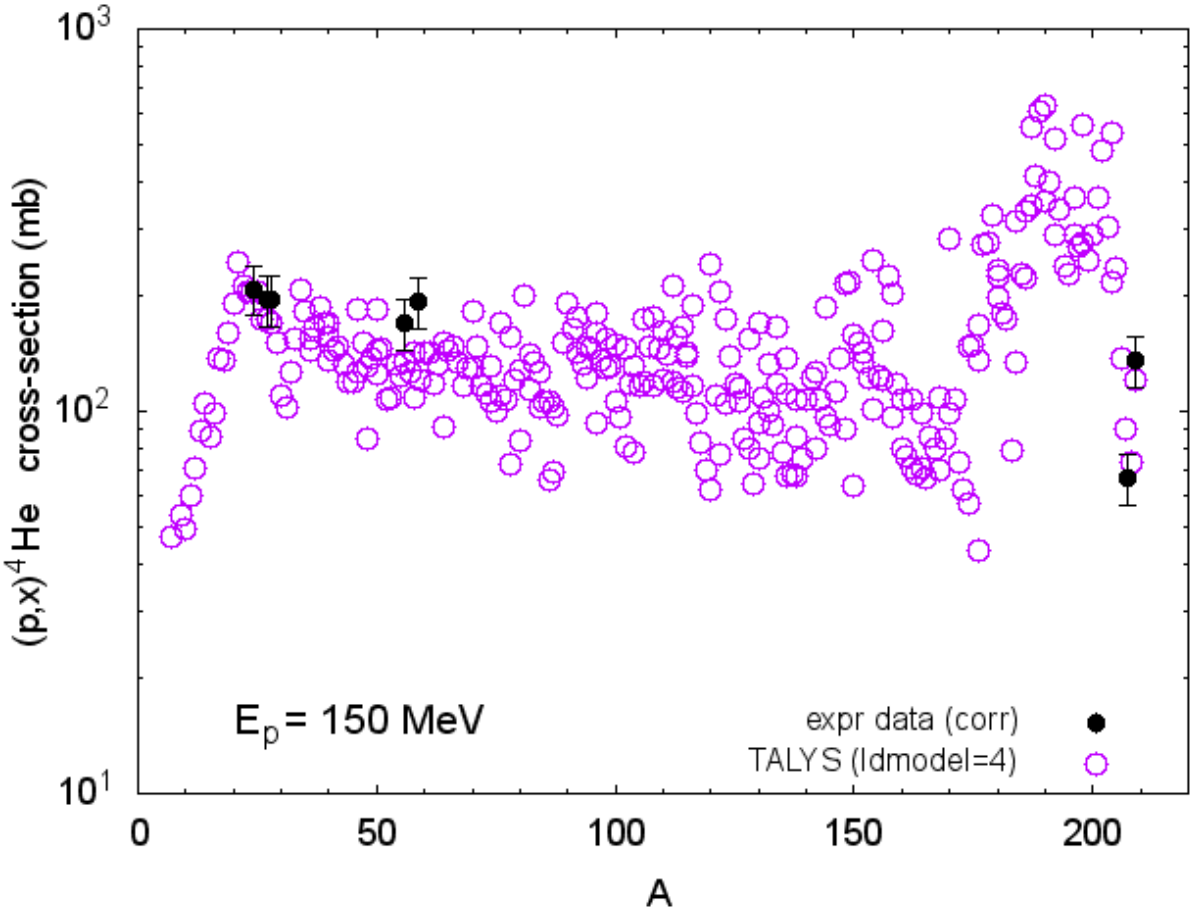

10^3
10^2
10^1
$(p,x)^4$He cross-section (mb)
E_p = 90 MeV
expr data (corr)
TALYS (ldmodel=4)
0
50
100
150
200
A

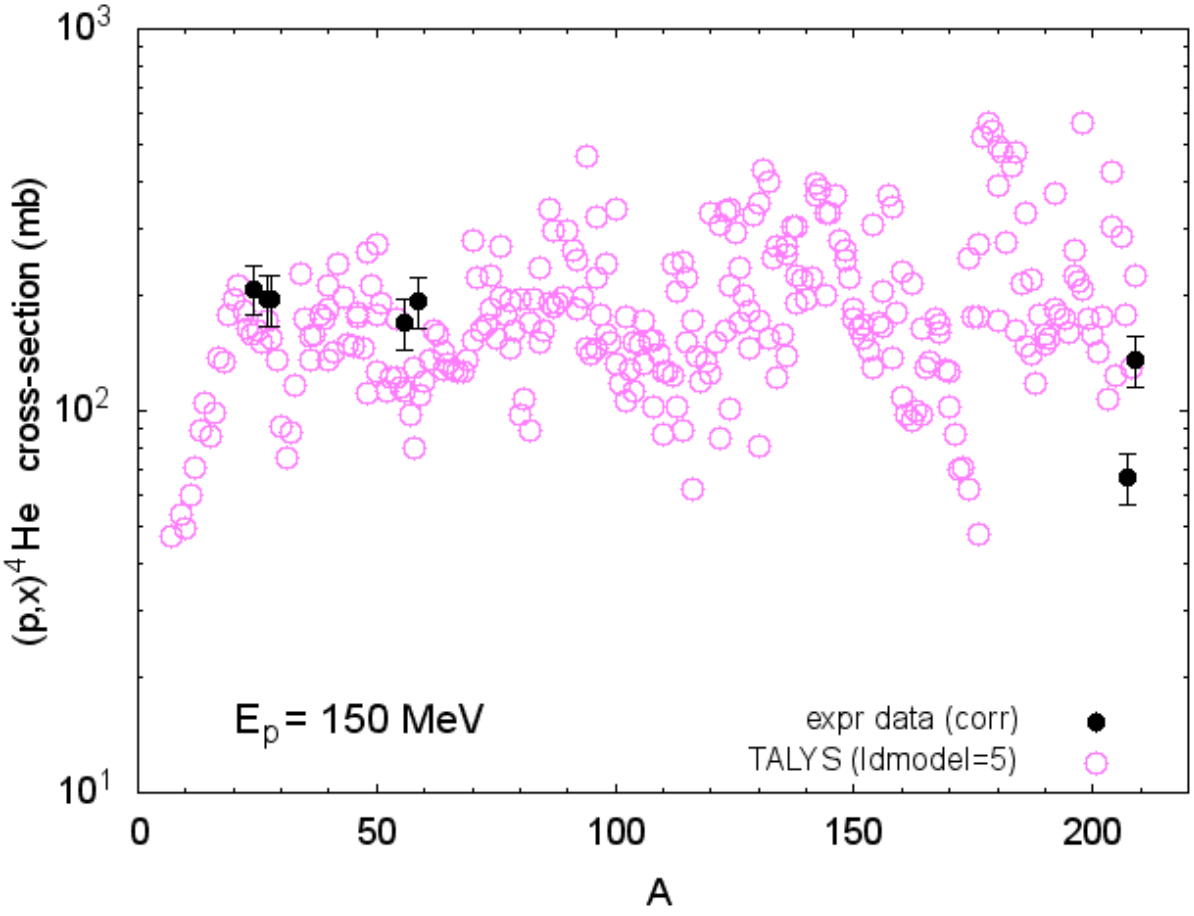

10^3
10^2
10^1
$(p,x)^4$He cross-section (mb)
E_p = 90 MeV
expr data (corr)
TALYS (ldmodel=5)
0
50
100
150
200
A


expr data (corr)
TALYS (ldmodel=1)
E_p = 150 MeV
(p,x)^{4}He cross-section (mb)
A
10^3
10^2
10^1
0
50
100
150
200

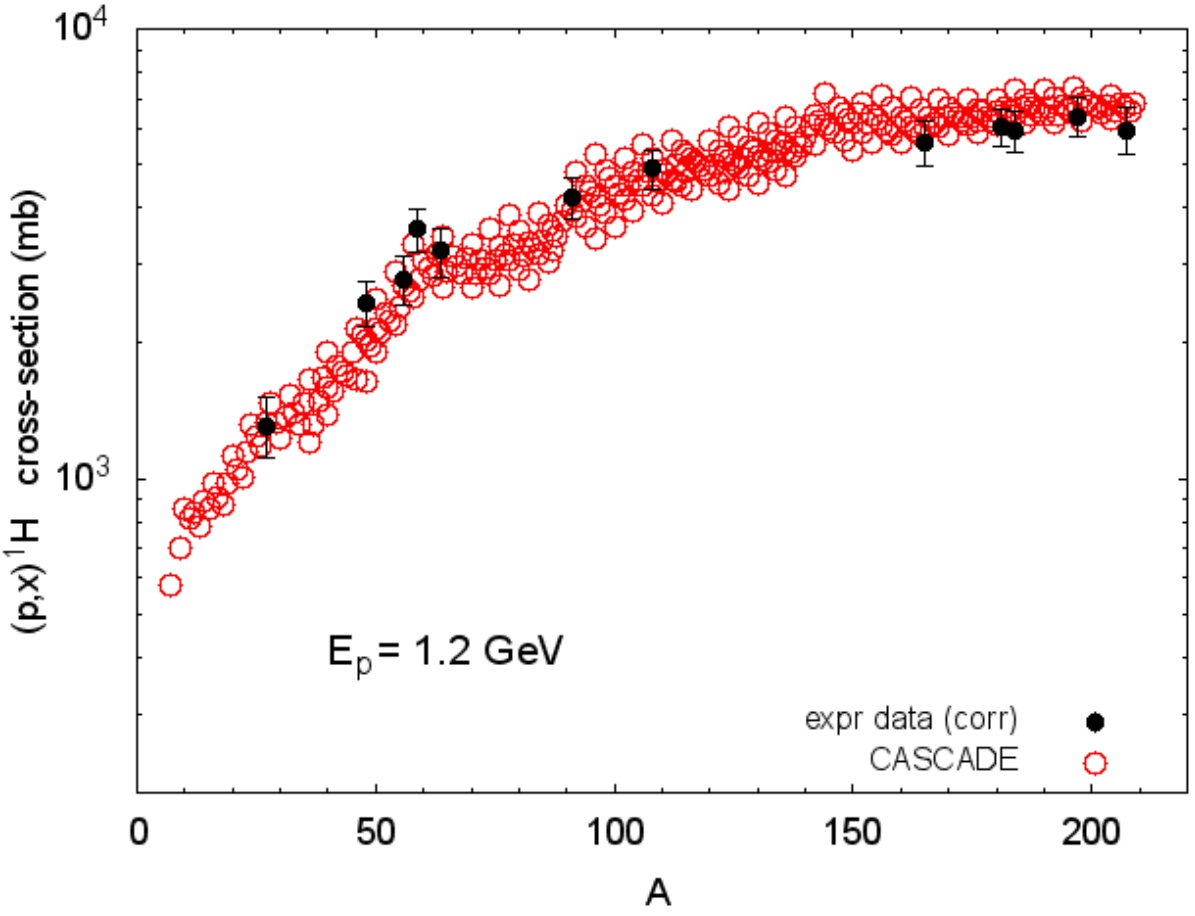

expr data (corr)
TALYS (ldmodel=2)
E_p = 150 MeV
(p,x)^{4}He cross-section (mb)
A
10^3
10^2
10^1
0
50
100
150
200

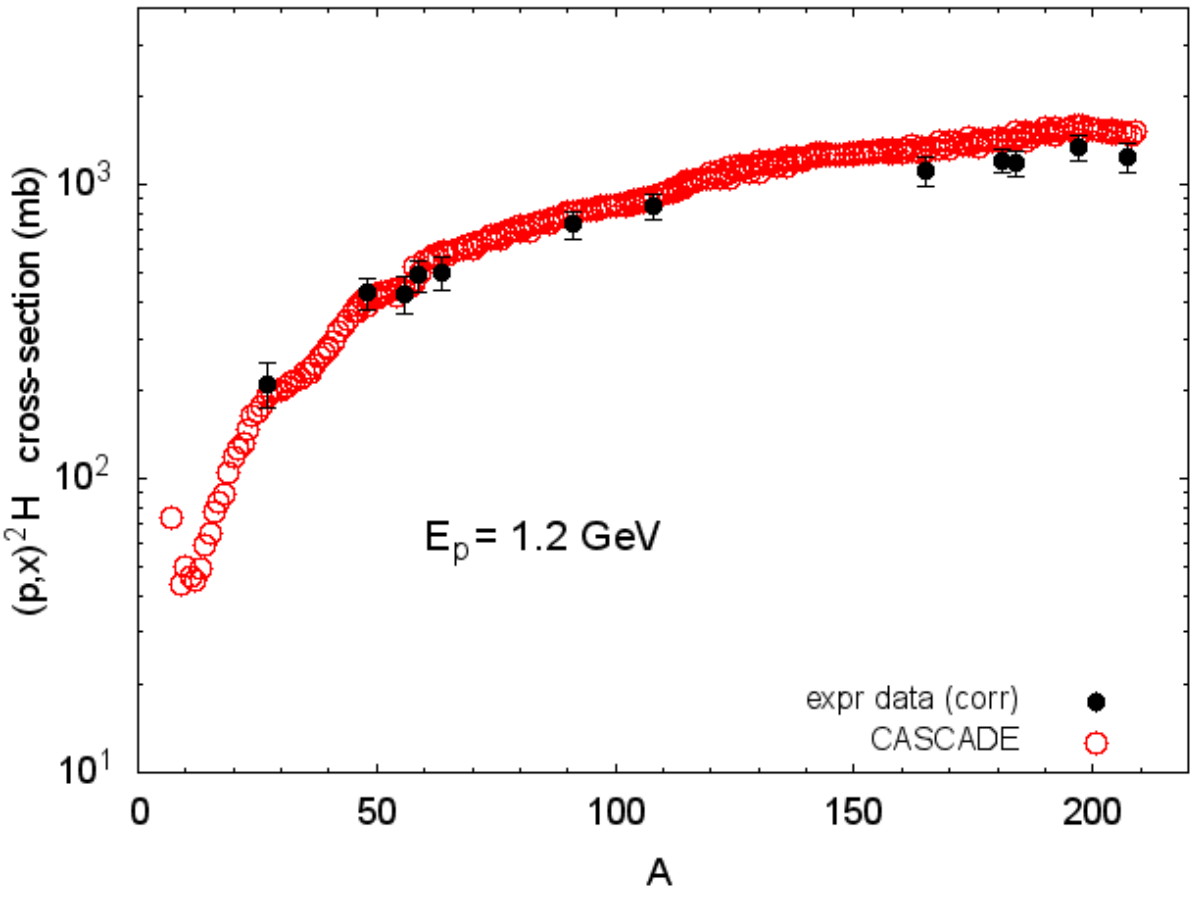

expr data (corr)
TALYS (ldmodel=3)
E_p = 150 MeV
(p,x)^{4}He cross-section (mb)
A
10^3
10^2
10^1
0
50
100
150
200

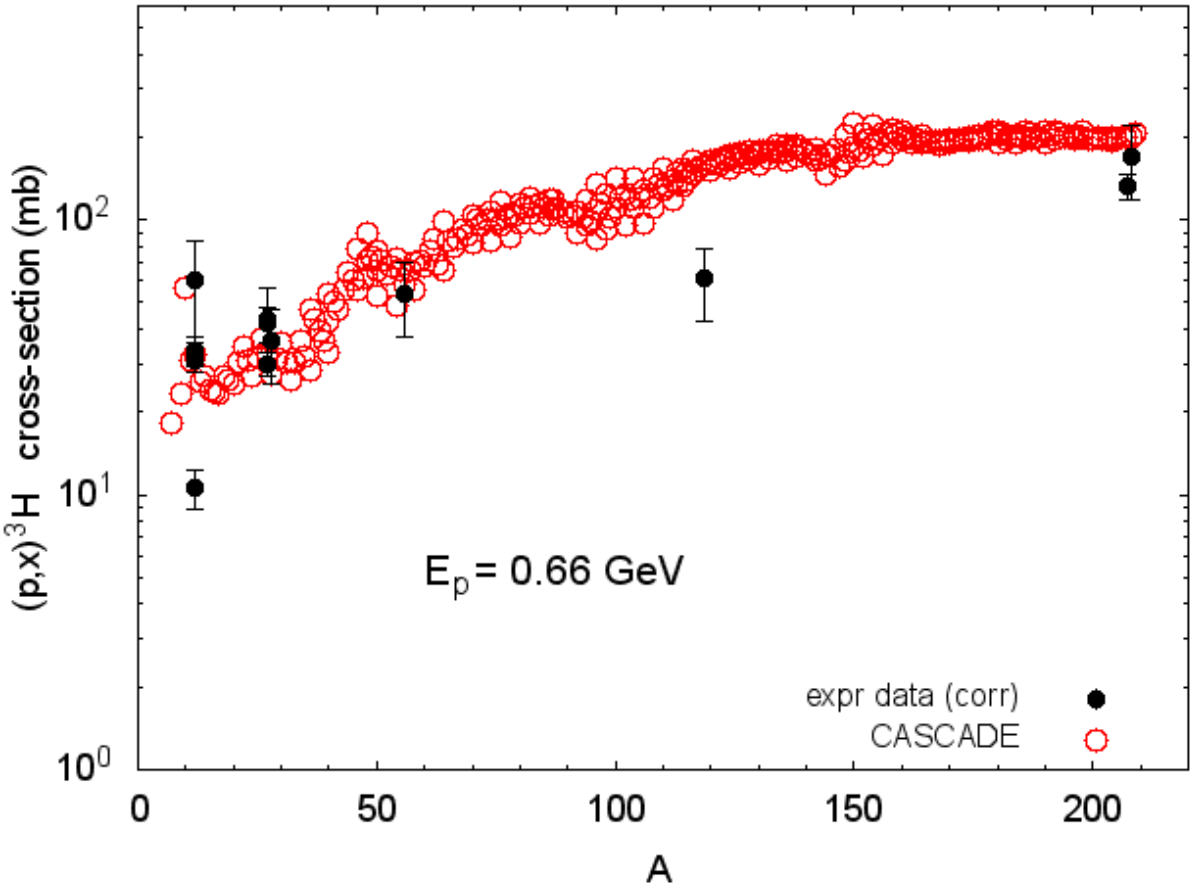

E_p = 150 MeV
expr data (corr)
TALYS (ldmodel=4)
(p,x)^{4}He cross-section (mb)
A
10^3
10^2
10^1
0
50
100
150
200

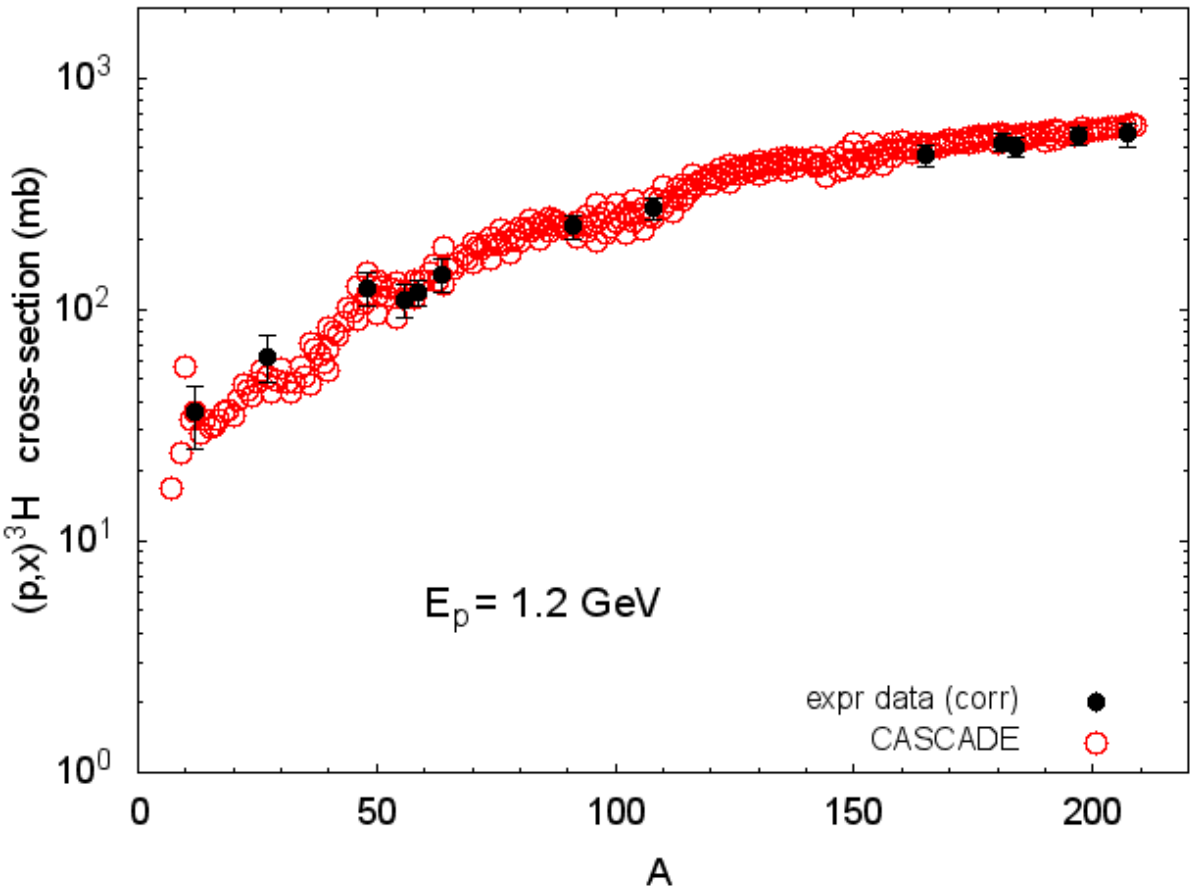

10^3
10^2
10^1
(p,x)^{4}He cross-section (mb)
E_p = 150 MeV
expr data (corr)
TALYS (ldmodel=5)
0
50
100
150
200
A

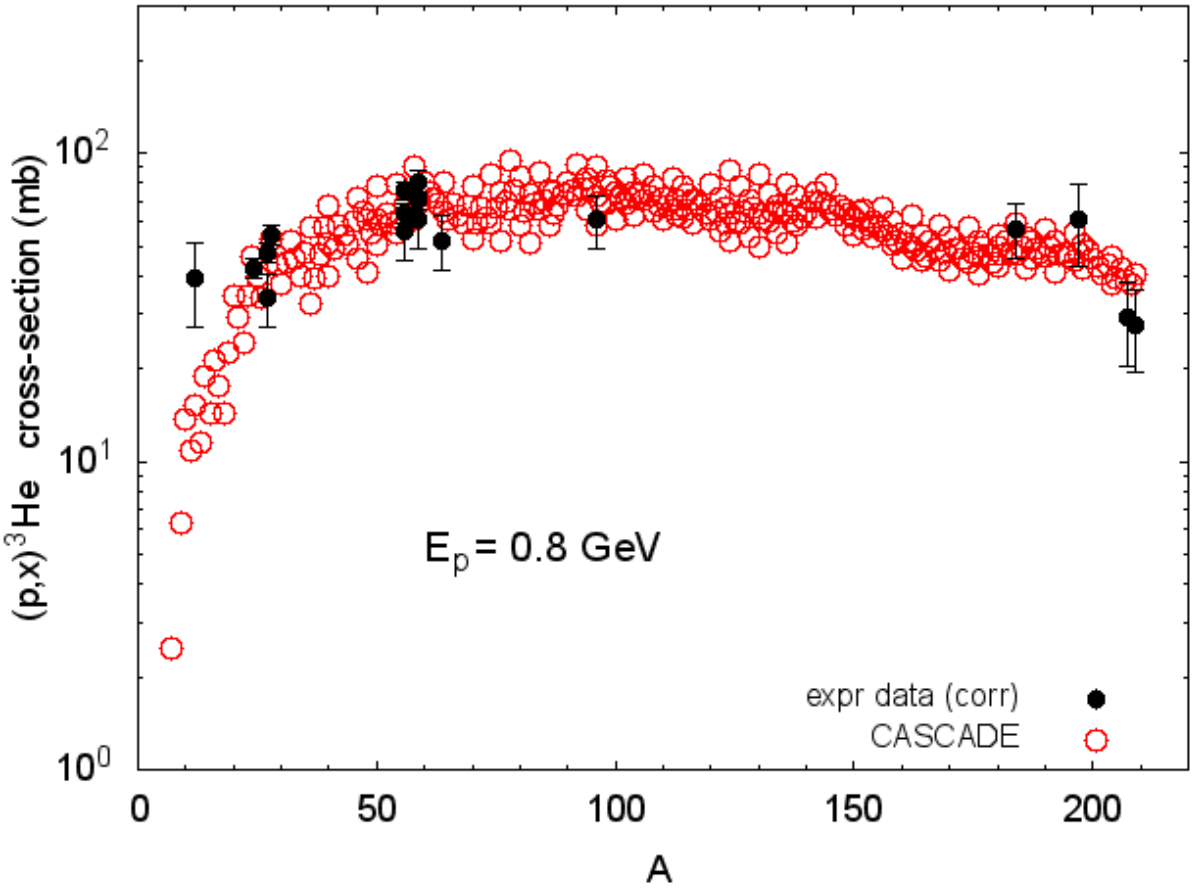
Appendix C: Figures: proton-, deuteron-, triton-, ^{3}He-, and α-particle-production cross-sections calculated using the CASCADE code and experimental data

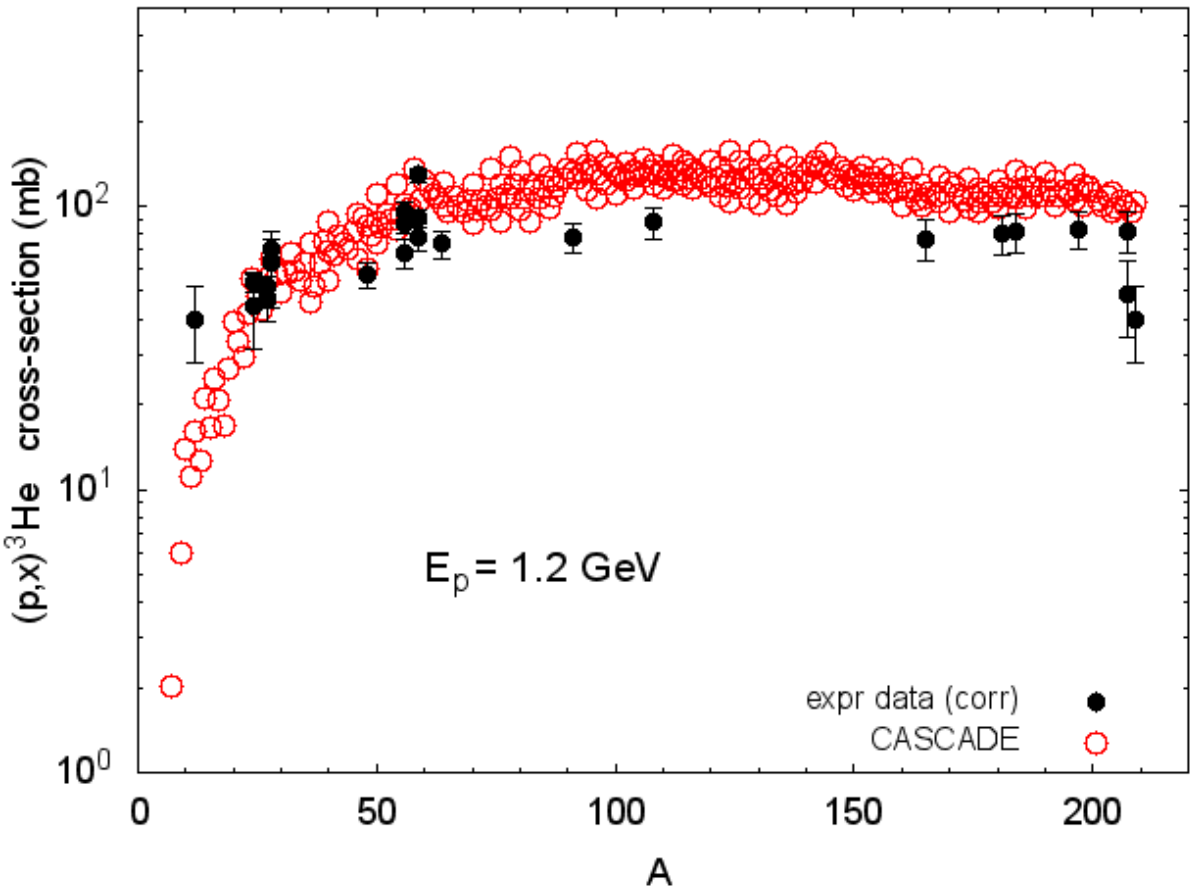

10^4
10^3
$(p,x)^1H$ cross-section (mb)
E_p = 1.2 GeV
expr data (corr)
CASCADE
0
50
100
150
200
A

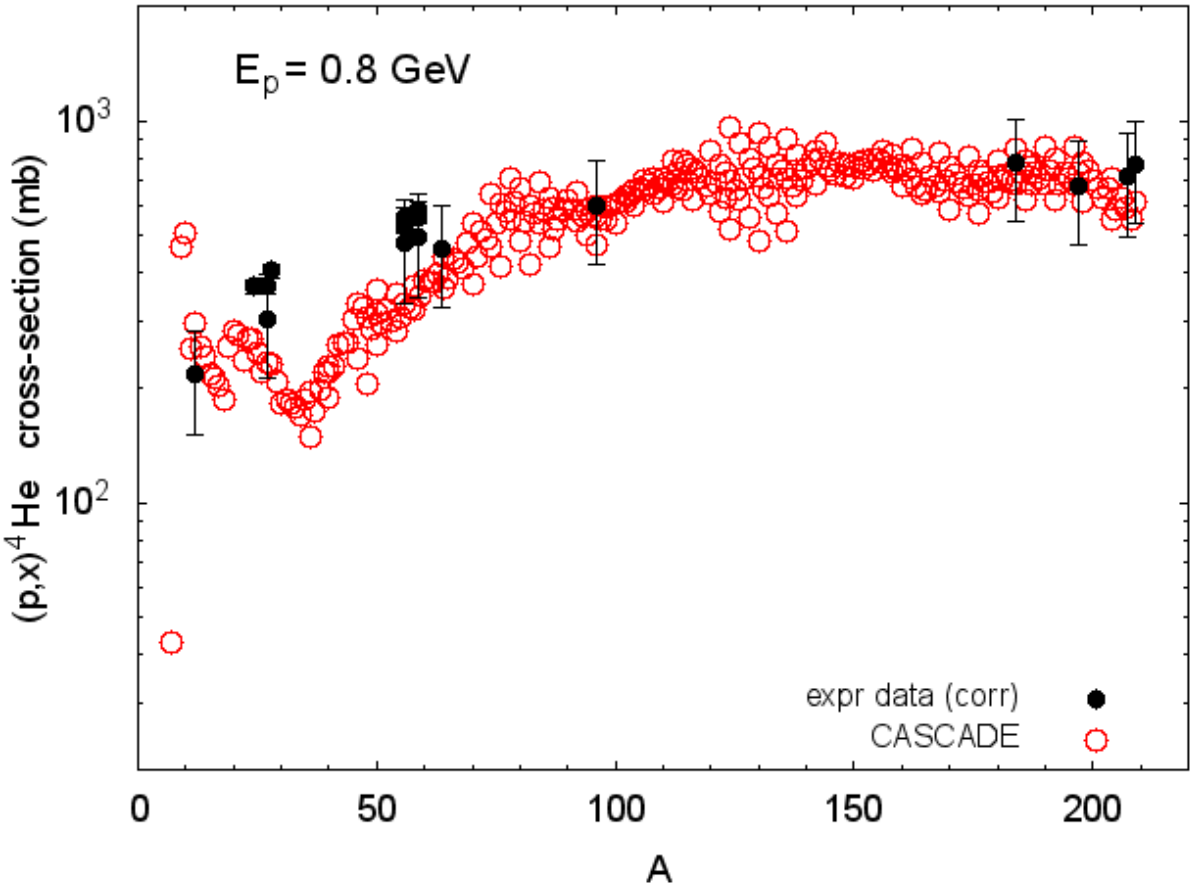

10^3
10^2
10^1
$(p,x)^2H$ cross-section (mb)
E_p = 1.2 GeV
expr data (corr)
CASCADE
0
50
100
150
200
A

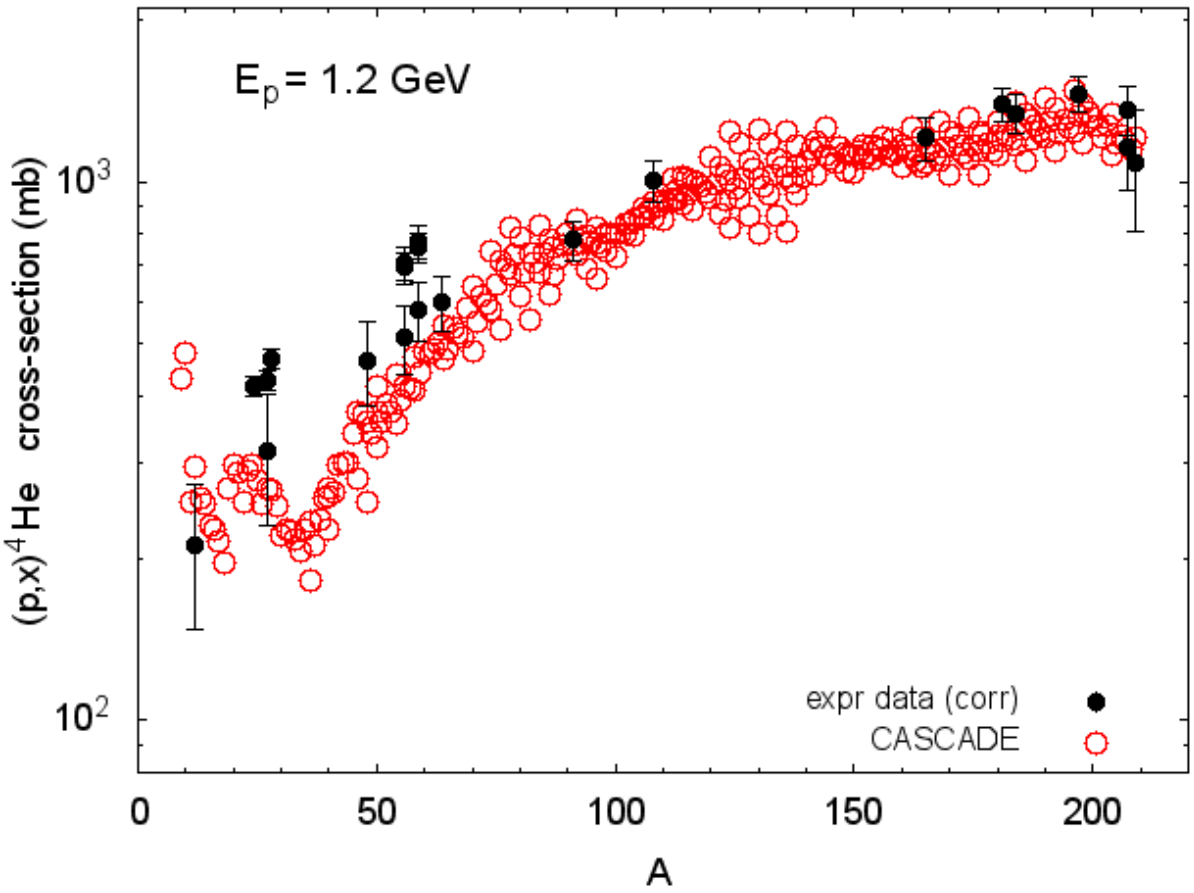

(p,x)^{3}H cross-section (mb)
10^2
10^1
10^0
E_p = 0.66 GeV
expr data (corr)
CASCADE
0
50
100
150
200
A


(p,x)^{3}H cross-section (mb)
10^3
10^2
10^1
10^0
E_p = 1.2 GeV
expr data (corr)
CASCADE
0
50
100
150
200
A


(p,x)3He cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
Ep = 0.8 GeV
expr data (corr)
CASCADE

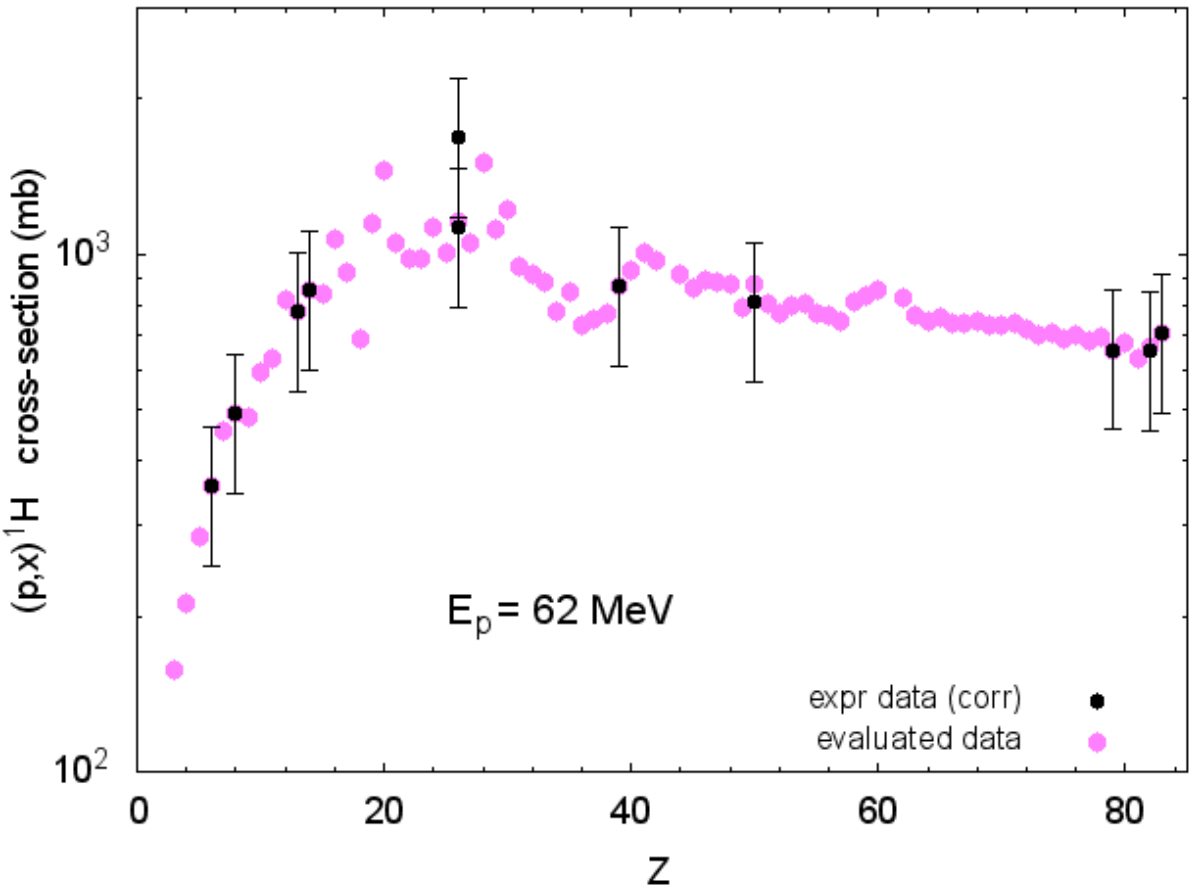

(p,x)3He cross-section (mb)
10^2
10^1
10^0
0
50
100
150
200
A
Ep = 1.2 GeV
expr data (corr)
CASCADE

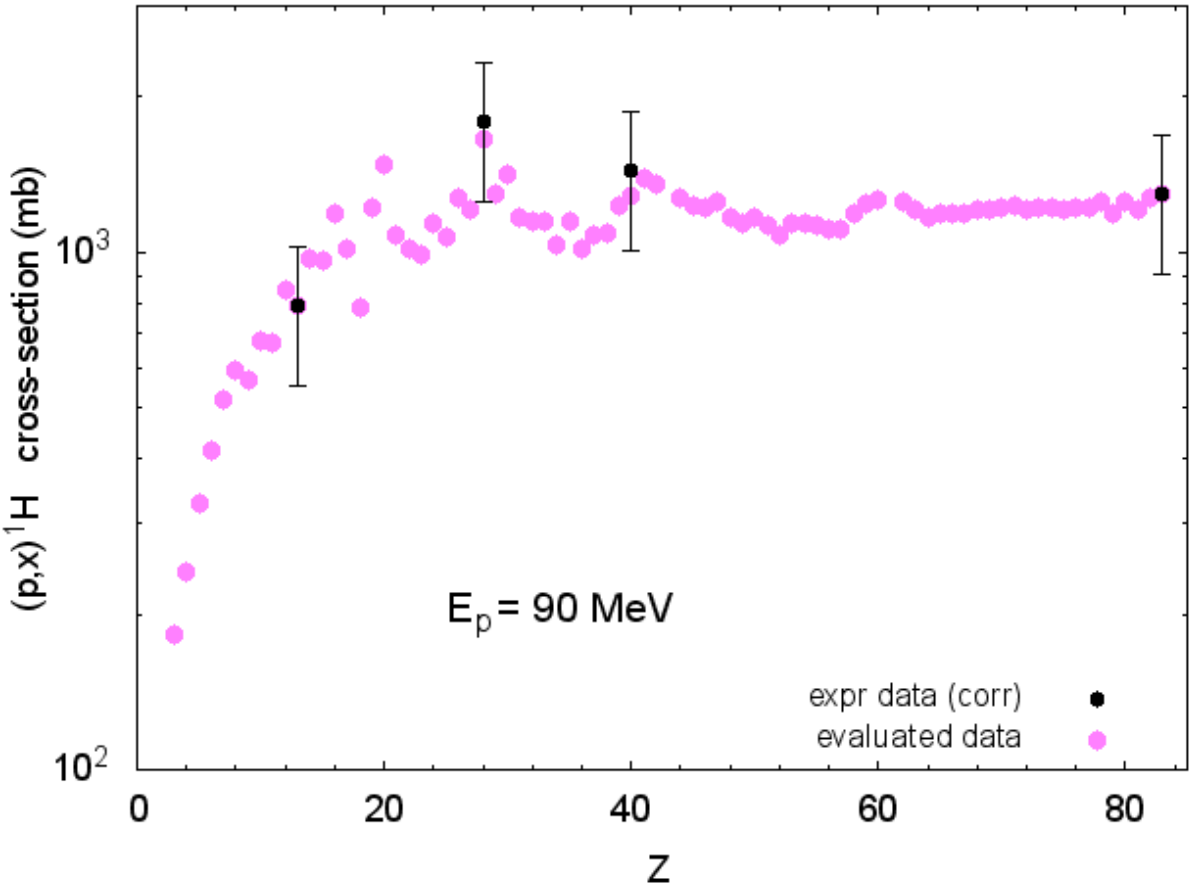

E_p = 0.8 GeV
10^3
10^2
$(p,x)^4$He cross-section (mb)
expr data (corr)
CASCADE
0
50
100
150
200
A

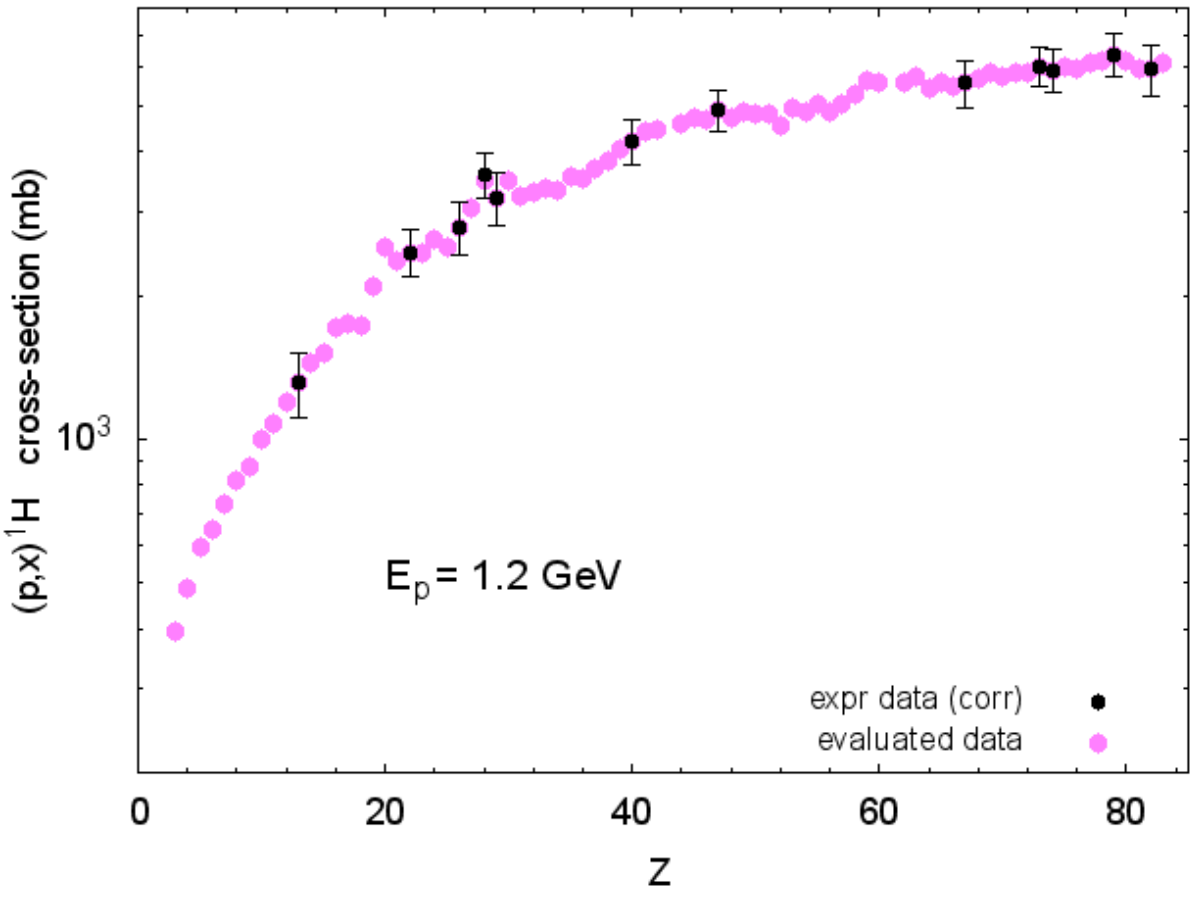

E_p = 1.2 GeV
10^3
10^2
$(p,x)^4$He cross-section (mb)
expr data (corr)
CASCADE
0
50
100
150
200
A

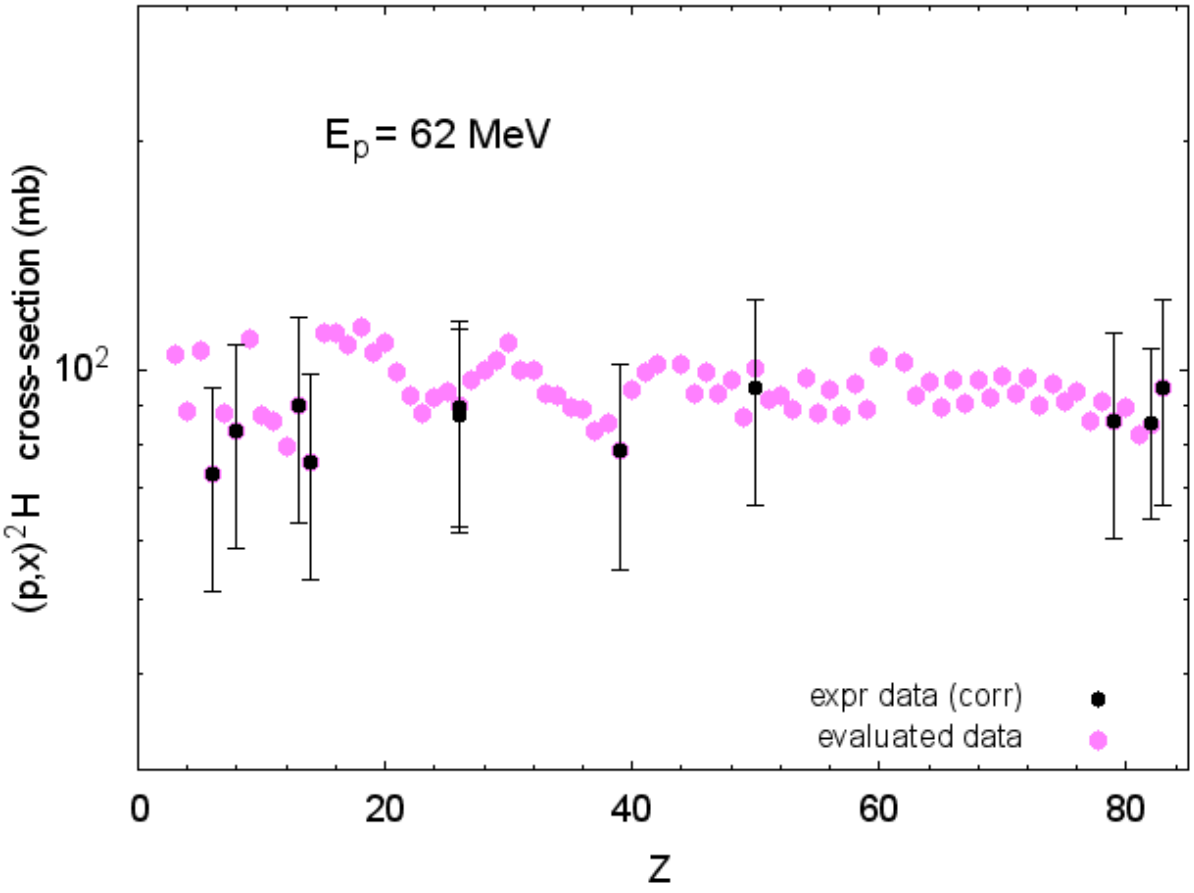
Appendix D: Figures: evaluated proton-, deuteron-, triton-, ^{3}He-, and α-particle- production cross-sections for natural mixtures of isotopes for elements with the atomic number from 3 to 83 and experimental data[1]

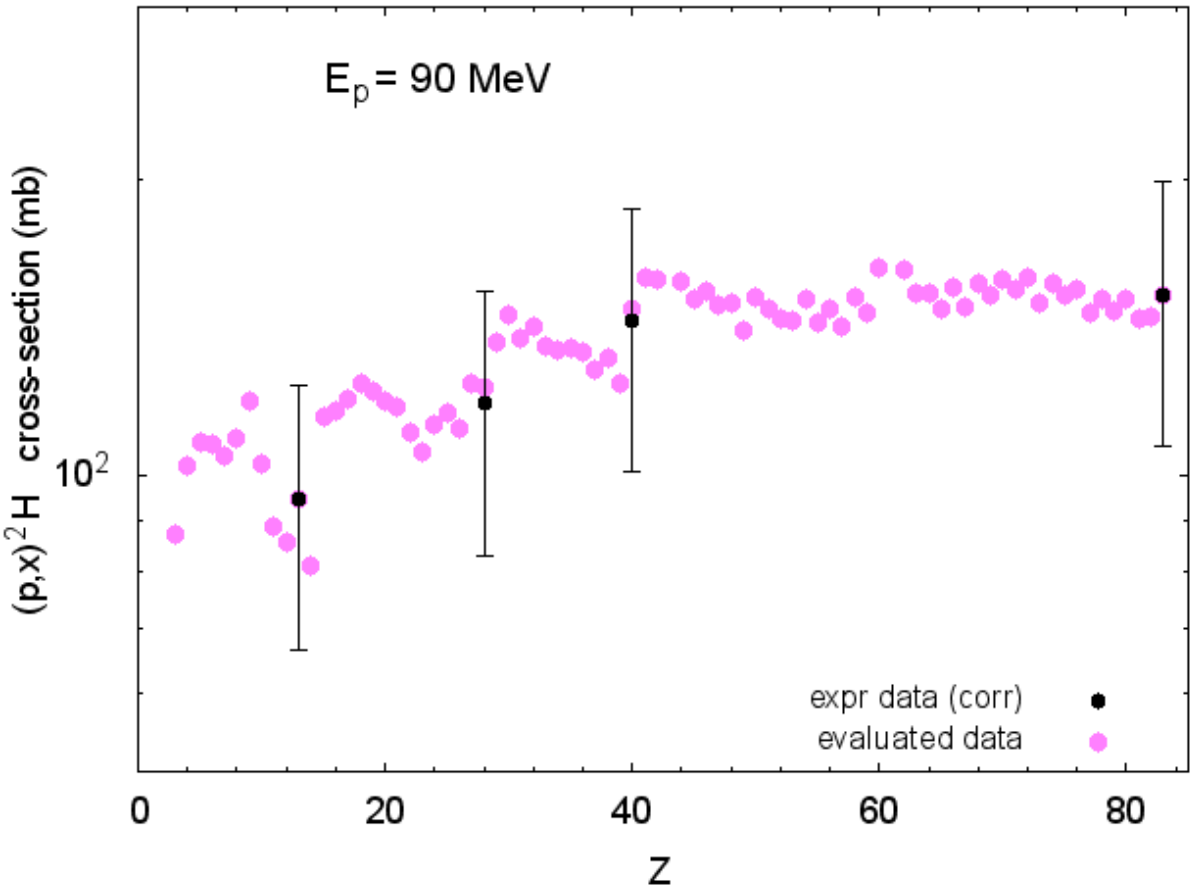
[1] Experimental data are from Tables 1-21 also for separate isotopes

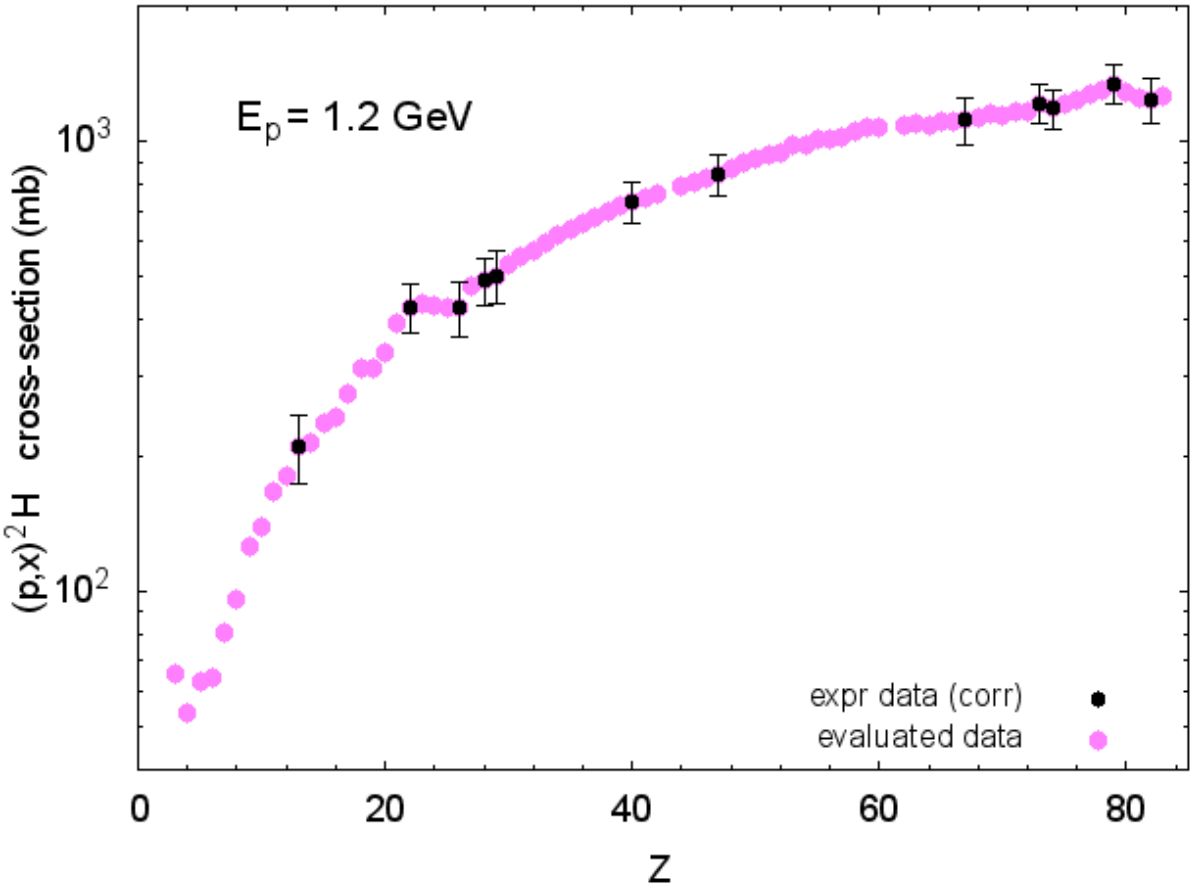

(p,x)1H cross-section (mb)
10^3
10^2
0
20
40
60
80
Z
Ep = 62 MeV
expr data (corr)
evaluated data

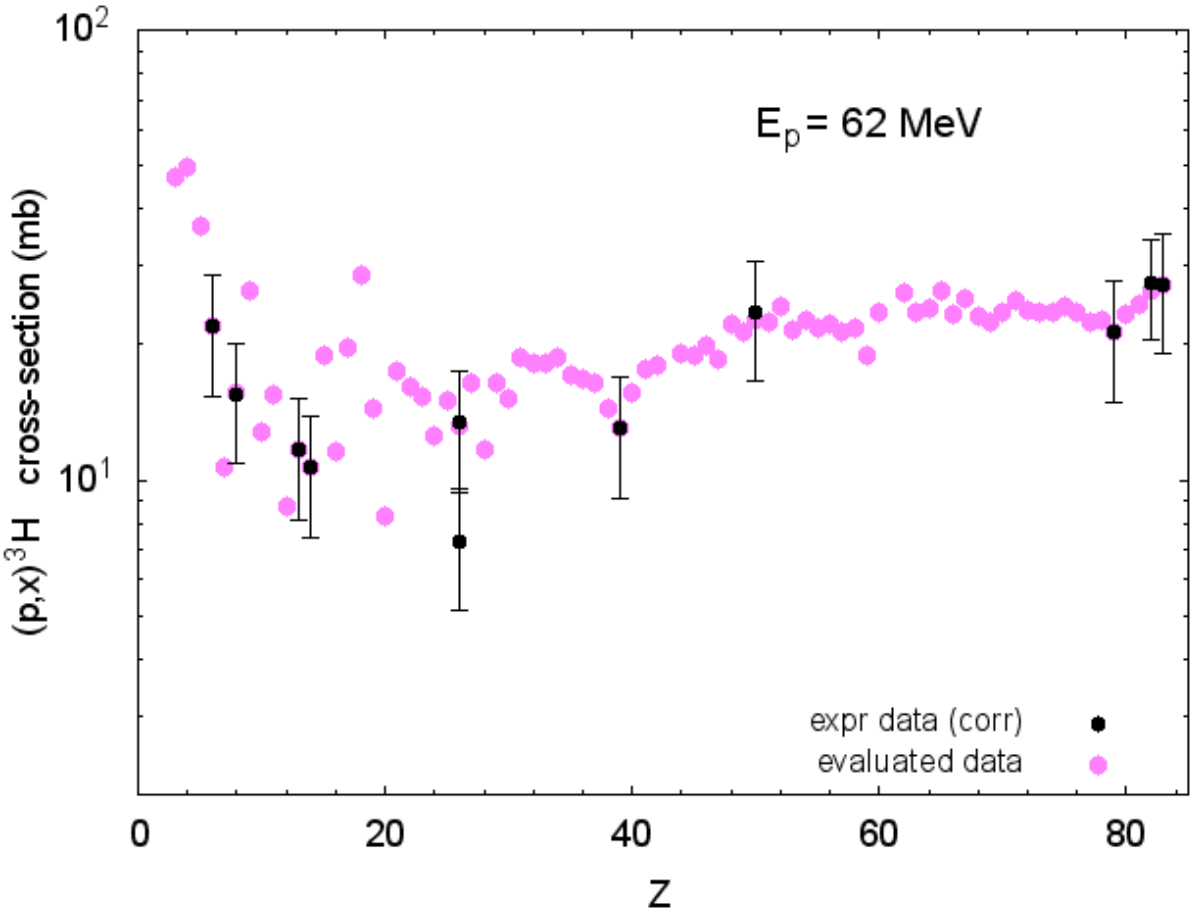

(p,x)^{1}H cross-section (mb)
10^3
10^2
E_p = 90 MeV
expr data (corr)
evaluated data
0
20
40
60
80
Z

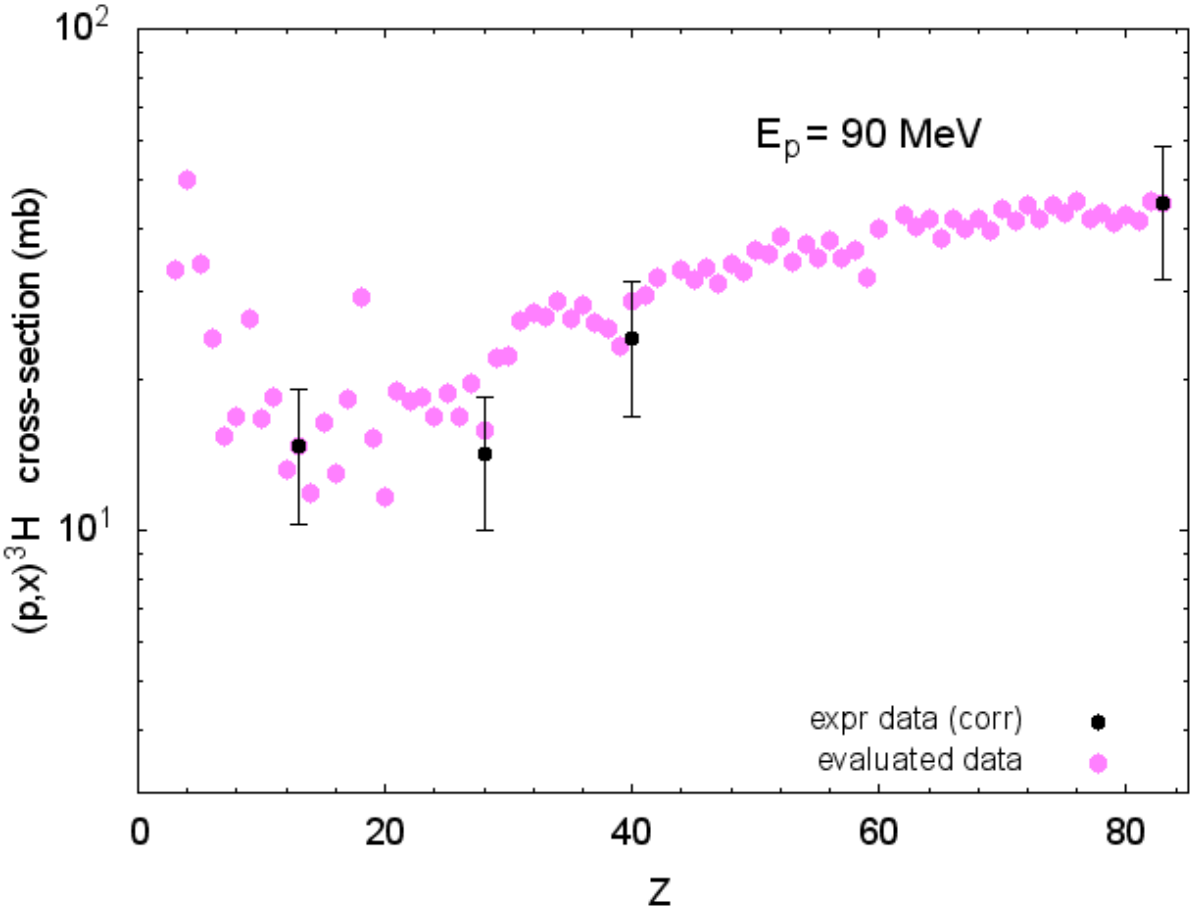

(p,x)^{1}H cross-section (mb)
10^3
E_p = 1.2 GeV
expr data (corr)
evaluated data
0
20
40
60
80
Z

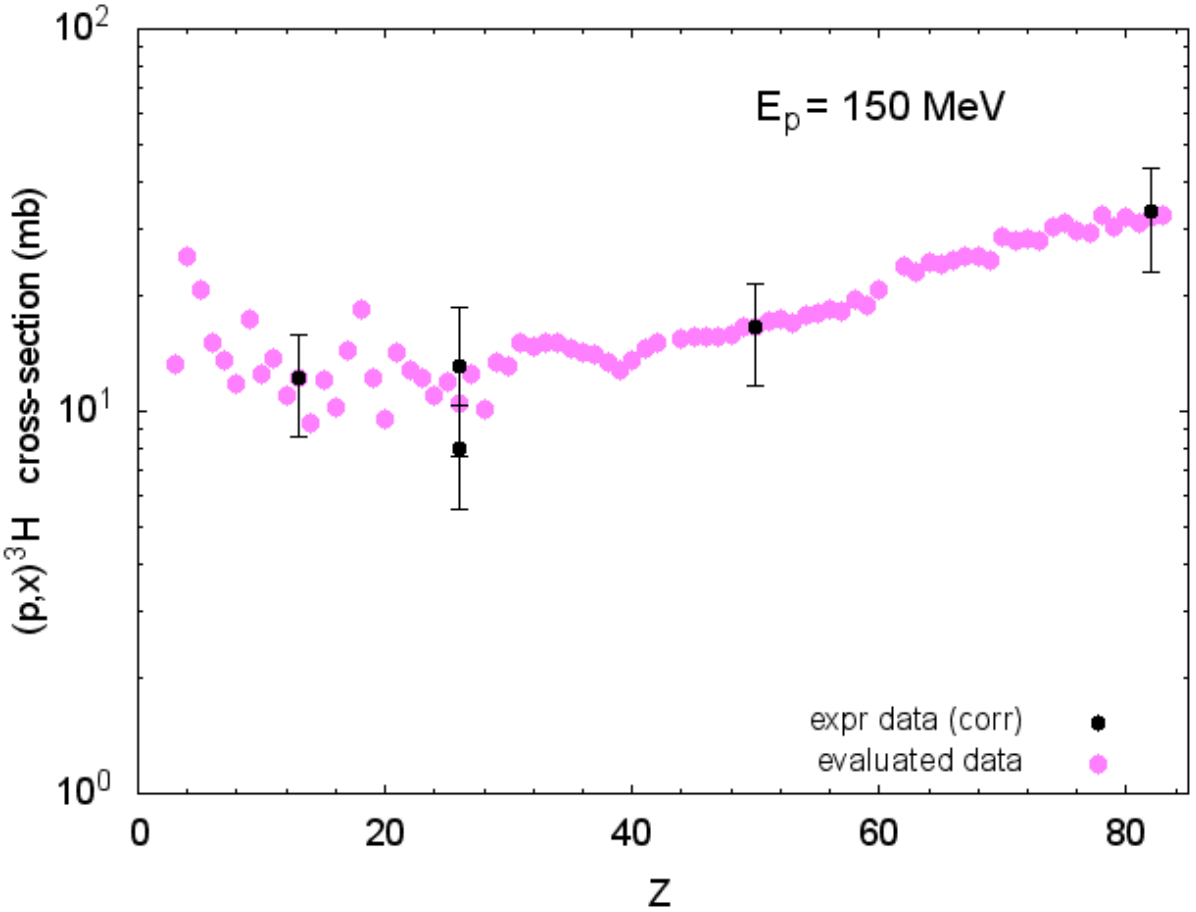

E_p = 62 MeV
$(p,x)^2H$ cross-section (mb)
10^2
expr data (corr)
evaluated data
0
20
40
60
80
Z

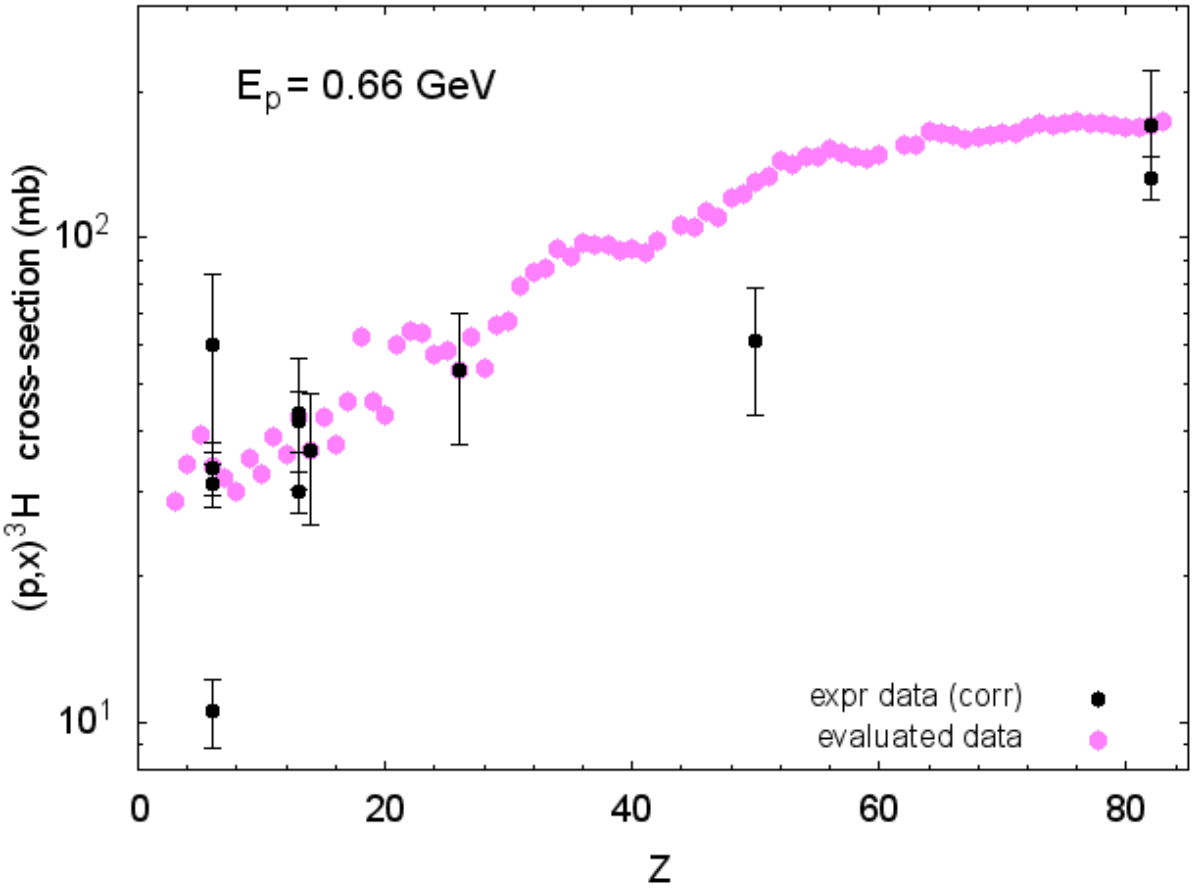

E_p = 90 MeV
$(p,x)^2H$ cross-section (mb)
10^2
expr data (corr)
evaluated data
0
20
40
60
80
Z

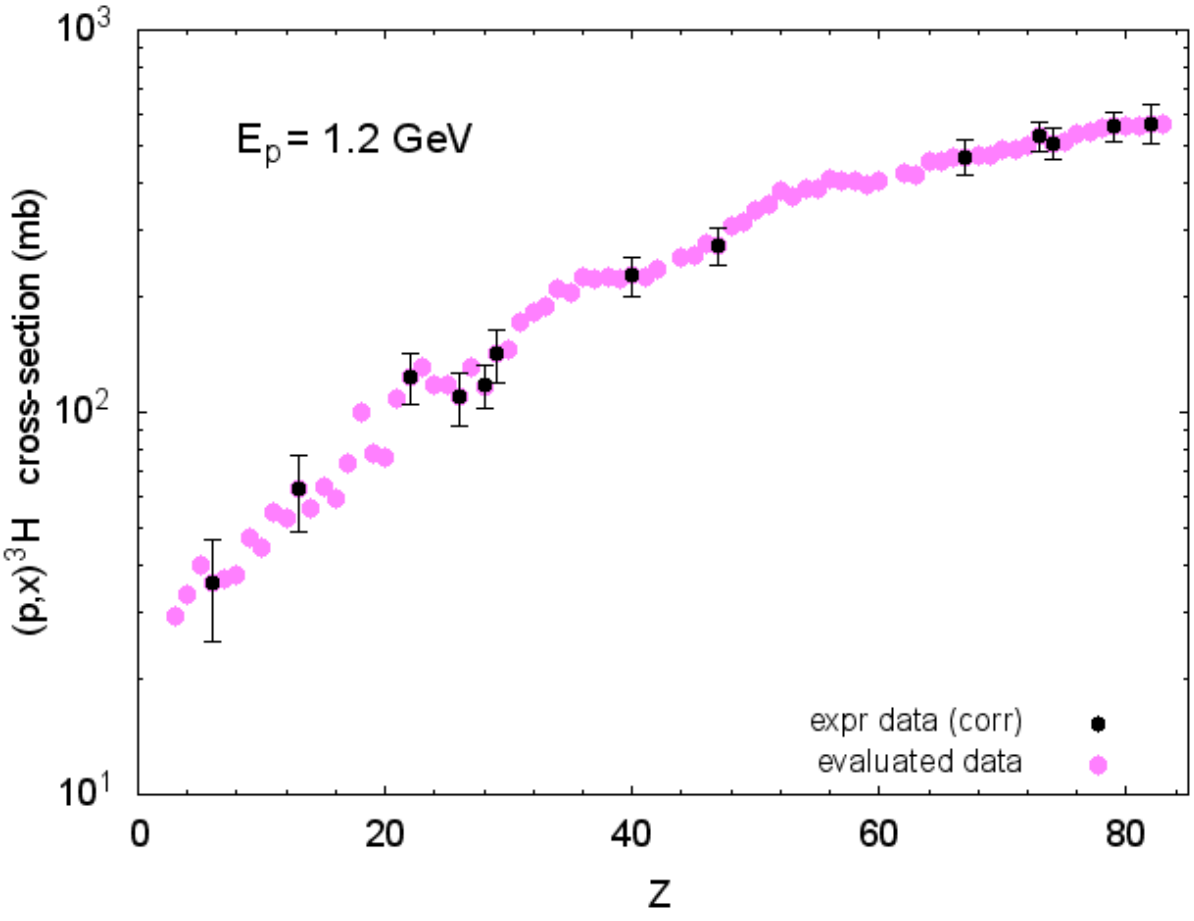

E_p = 1.2 GeV
10^3
10^2
$(p,x)^2H$ cross-section (mb)
expr data (corr)
evaluated data
0
20
40
60
80
Z

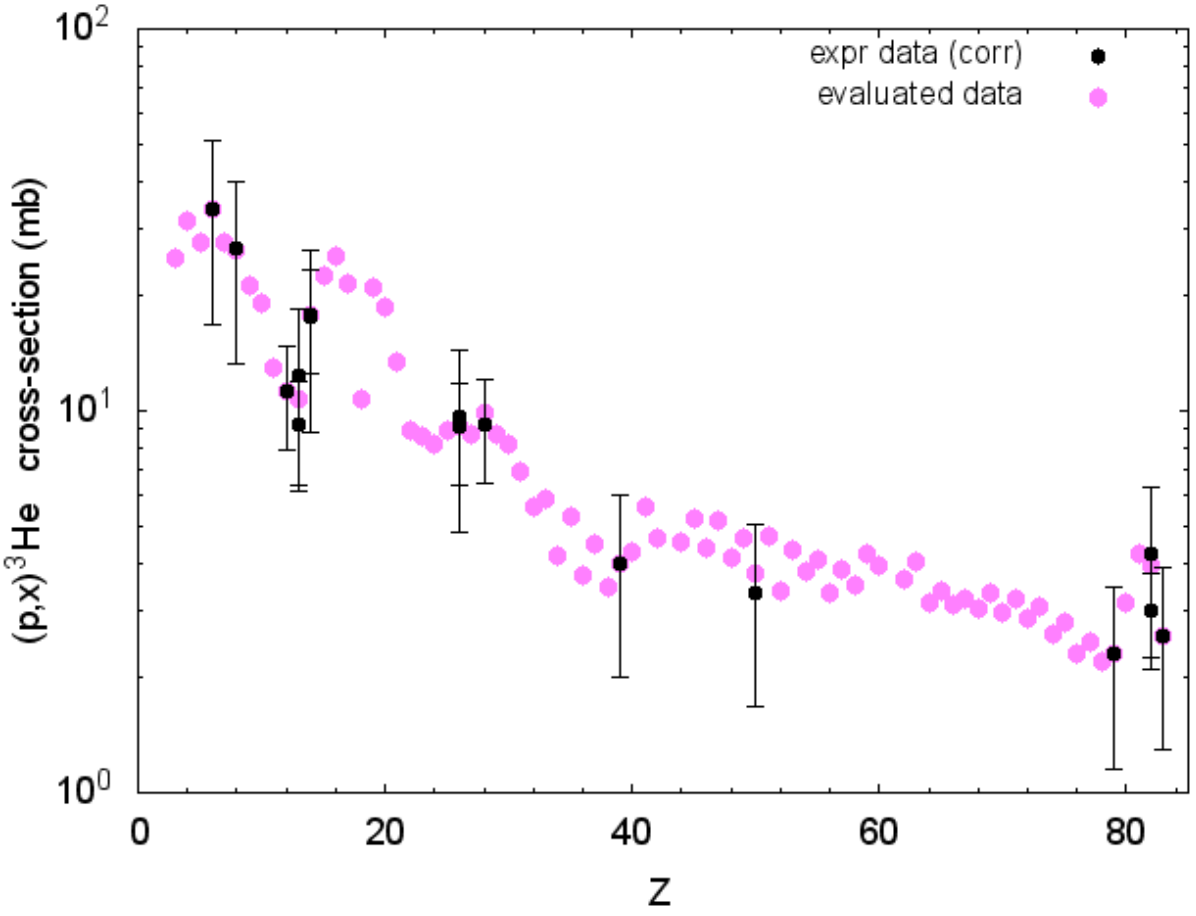

E_p = 62 MeV
10^2
10^1
$(p,x)^3H$ cross-section (mb)
expr data (corr)
evaluated data
0
20
40
60
80
Z

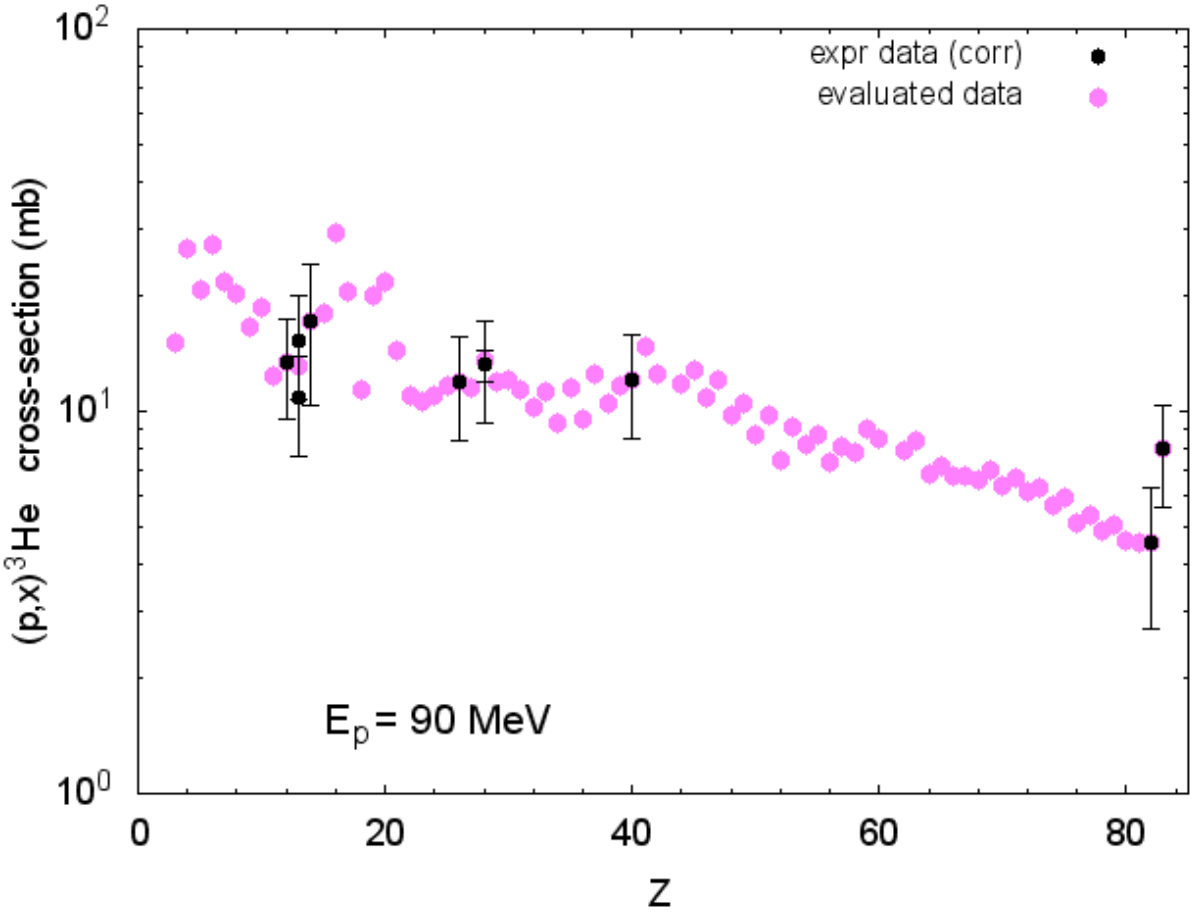

10^2
10^1
E_p = 90 MeV
(p,x)^{3}H cross-section (mb)
expr data (corr)
evaluated data
0
20
40
60
80
Z

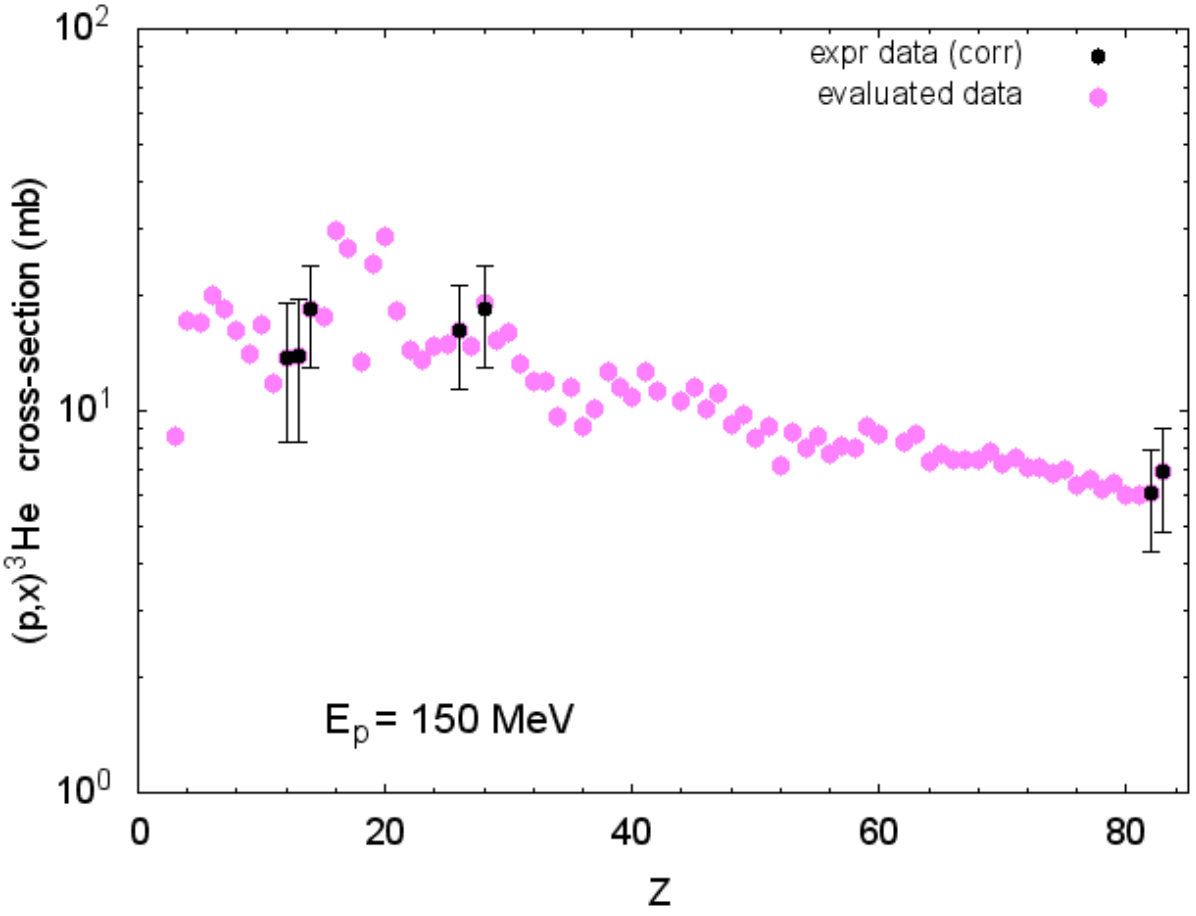

10^2
10^1
10^0
E_p = 150 MeV
(p,x)^{3}H cross-section (mb)
expr data (corr)
evaluated data
0
20
40
60
80
Z

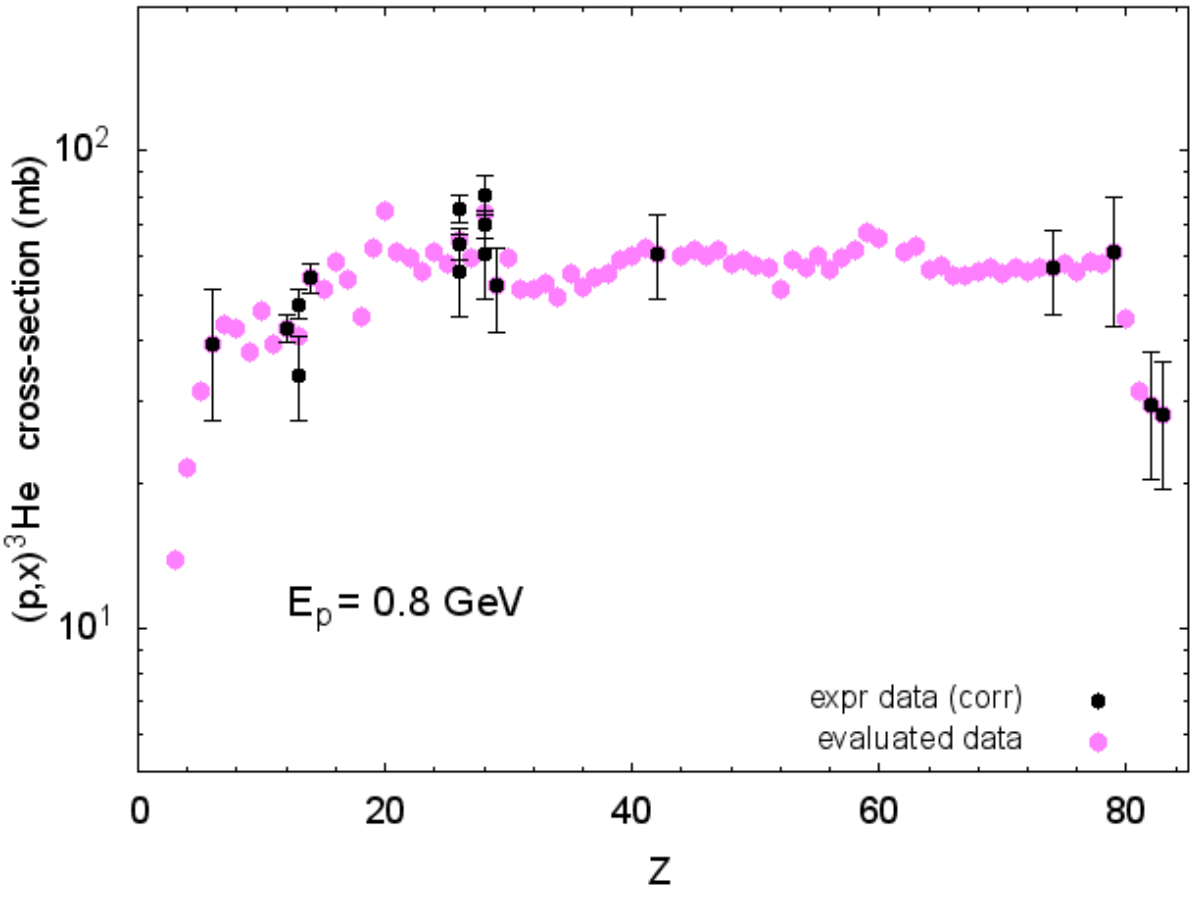

E_p = 0.66 GeV
$(p,x)^3H$ cross-section (mb)
10^2
10^1
0
20
40
60
80
Z
expr data (corr)
evaluated data

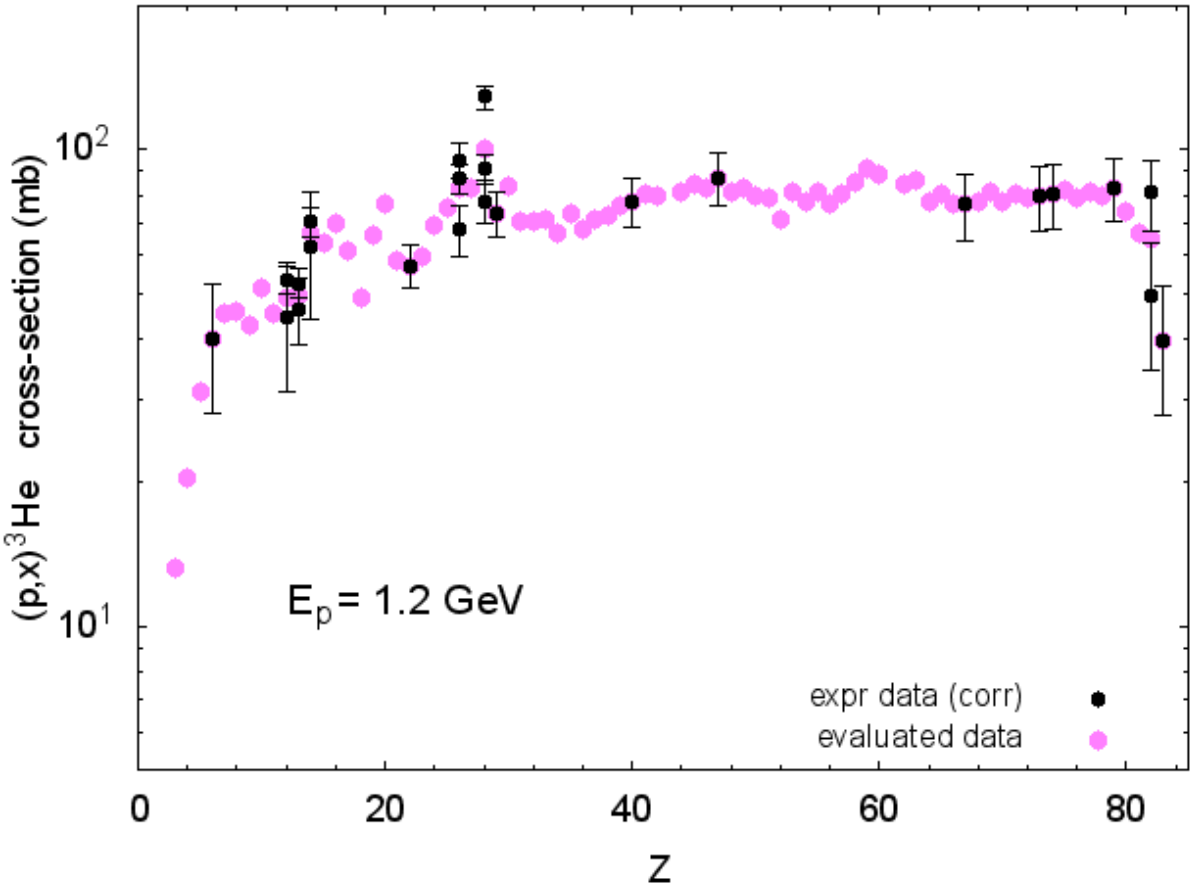

E_p = 1.2 GeV
$(p,x)^3H$ cross-section (mb)
10^3
10^2
10^1
0
20
40
60
80
Z
expr data (corr)
evaluated data

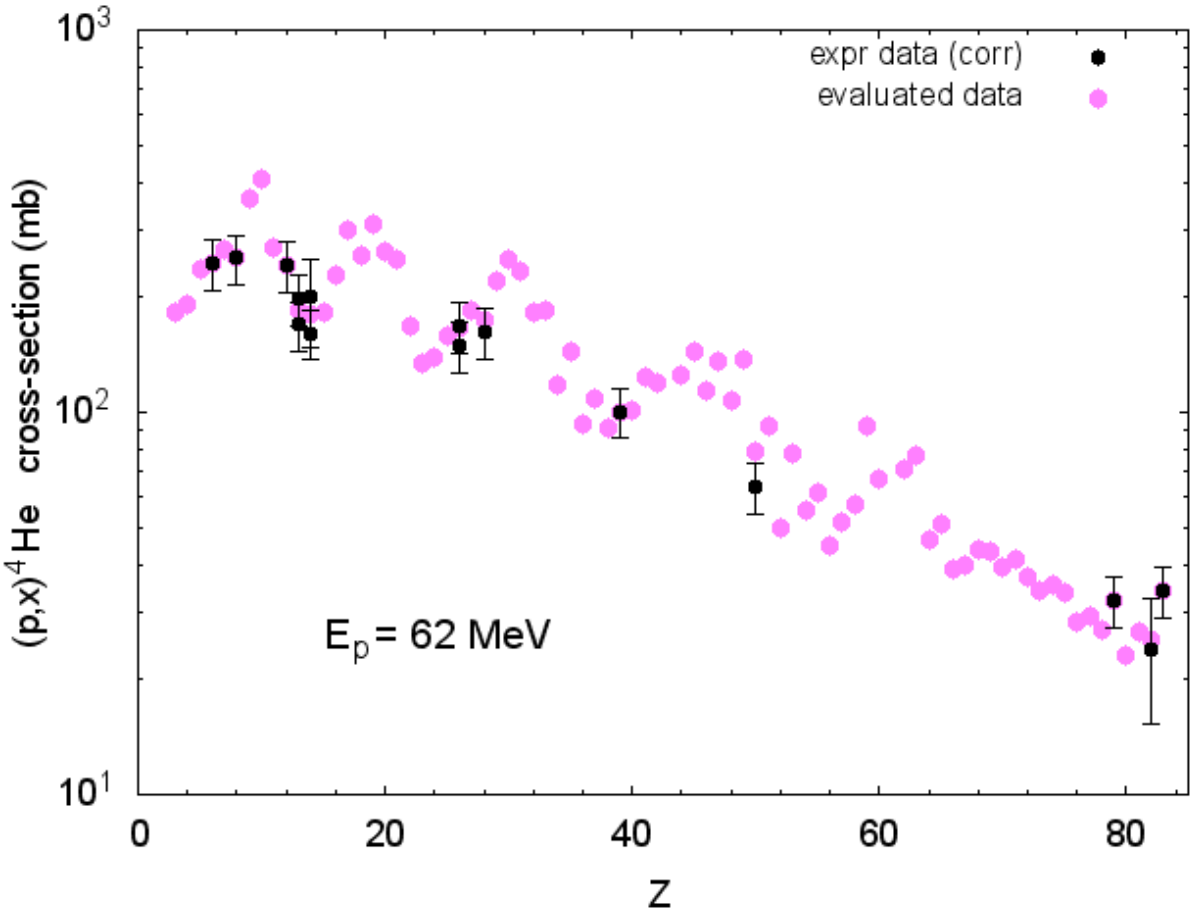

expr data (corr)
evaluated data
(p,x)3He cross-section (mb)
Z

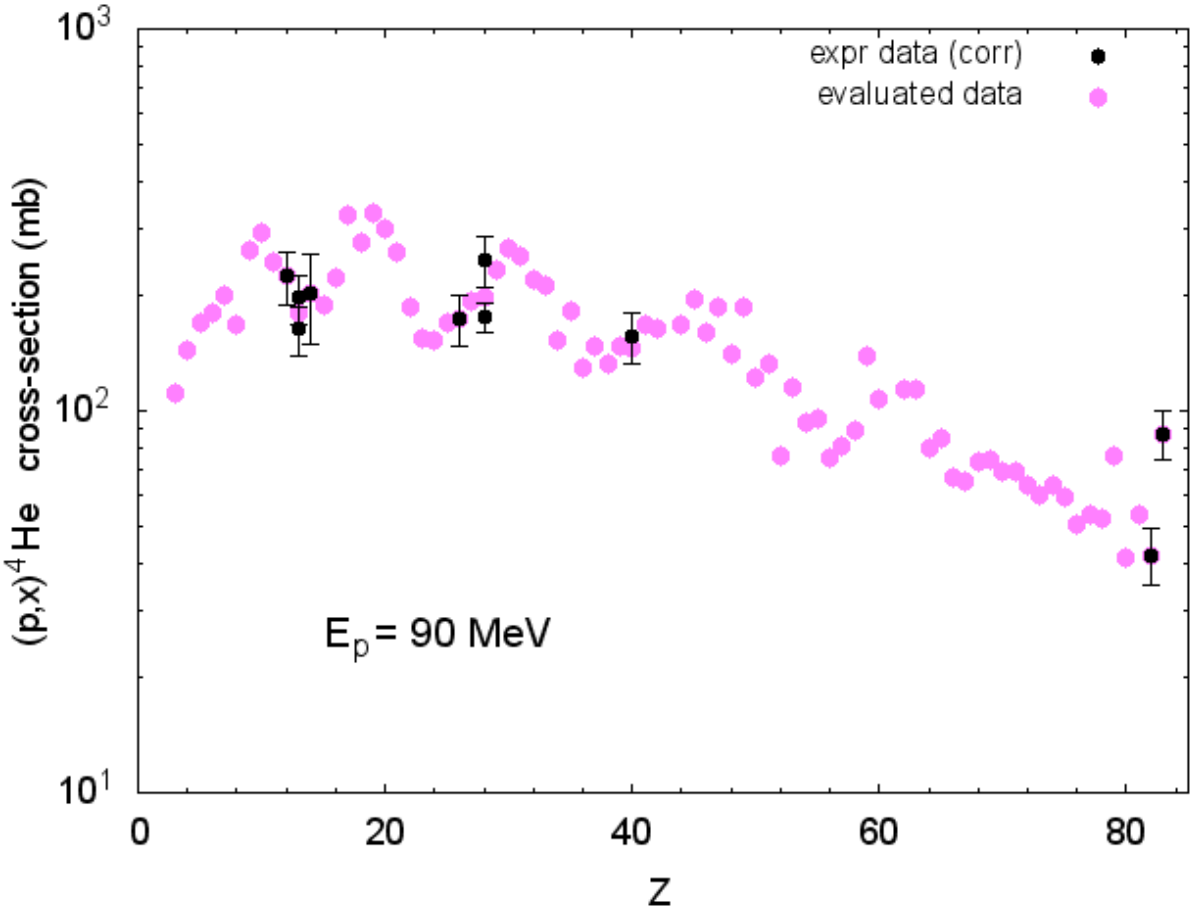

expr data (corr)
evaluated data
(p,x)3He cross-section (mb)
Ep = 90 MeV
Z

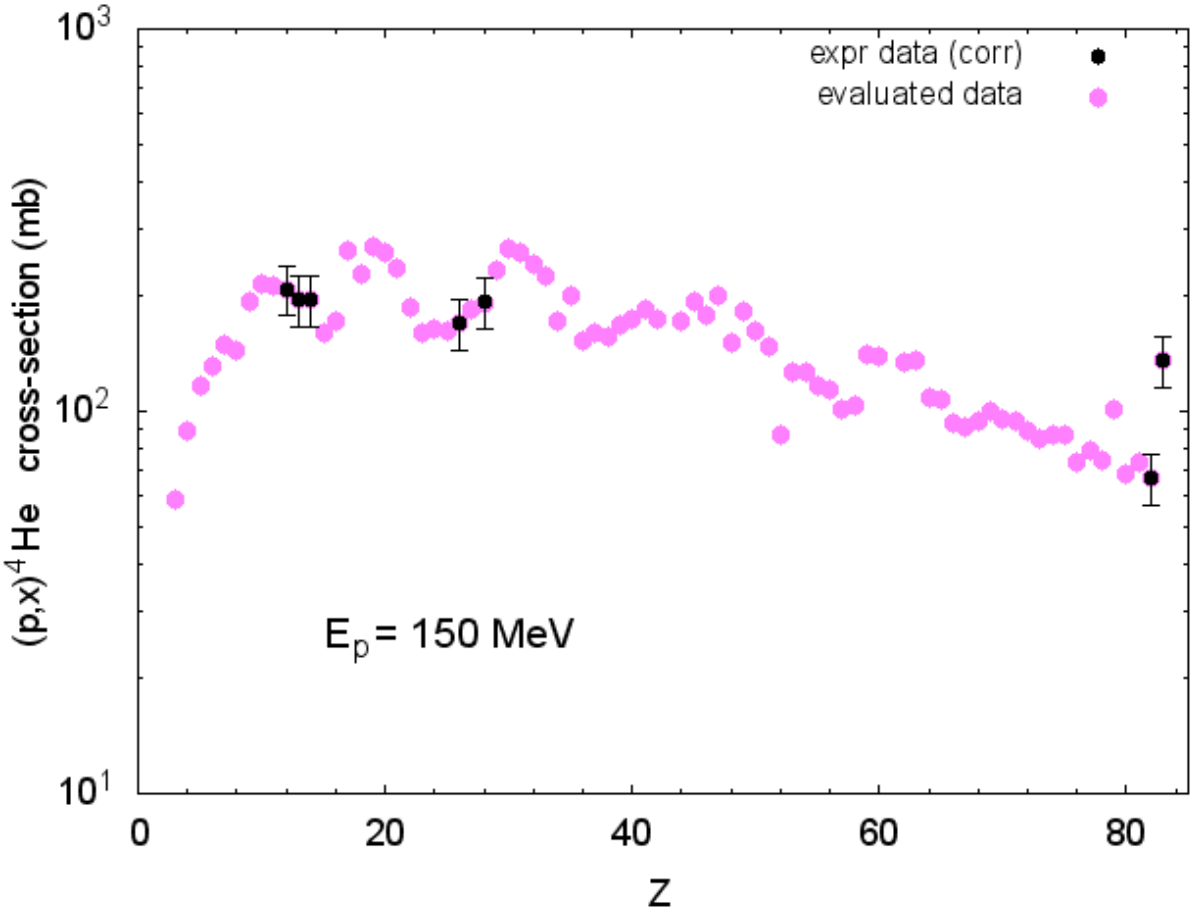

expr data (corr)
evaluated data
E_p = 150 MeV
(p,x)^{3}He cross-section (mb)
Z

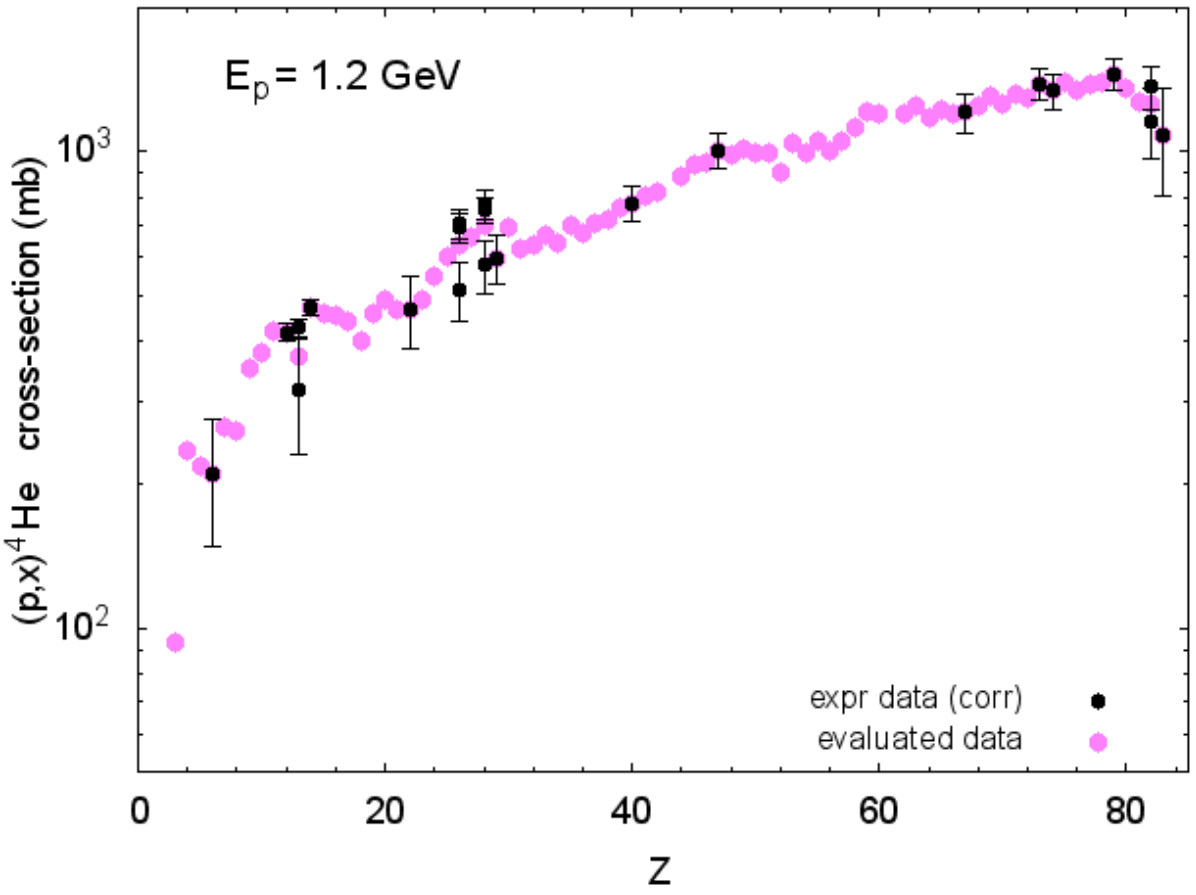

E_p = 0.8 GeV
expr data (corr)
evaluated data
(p,x)^{3}He cross-section (mb)
Z

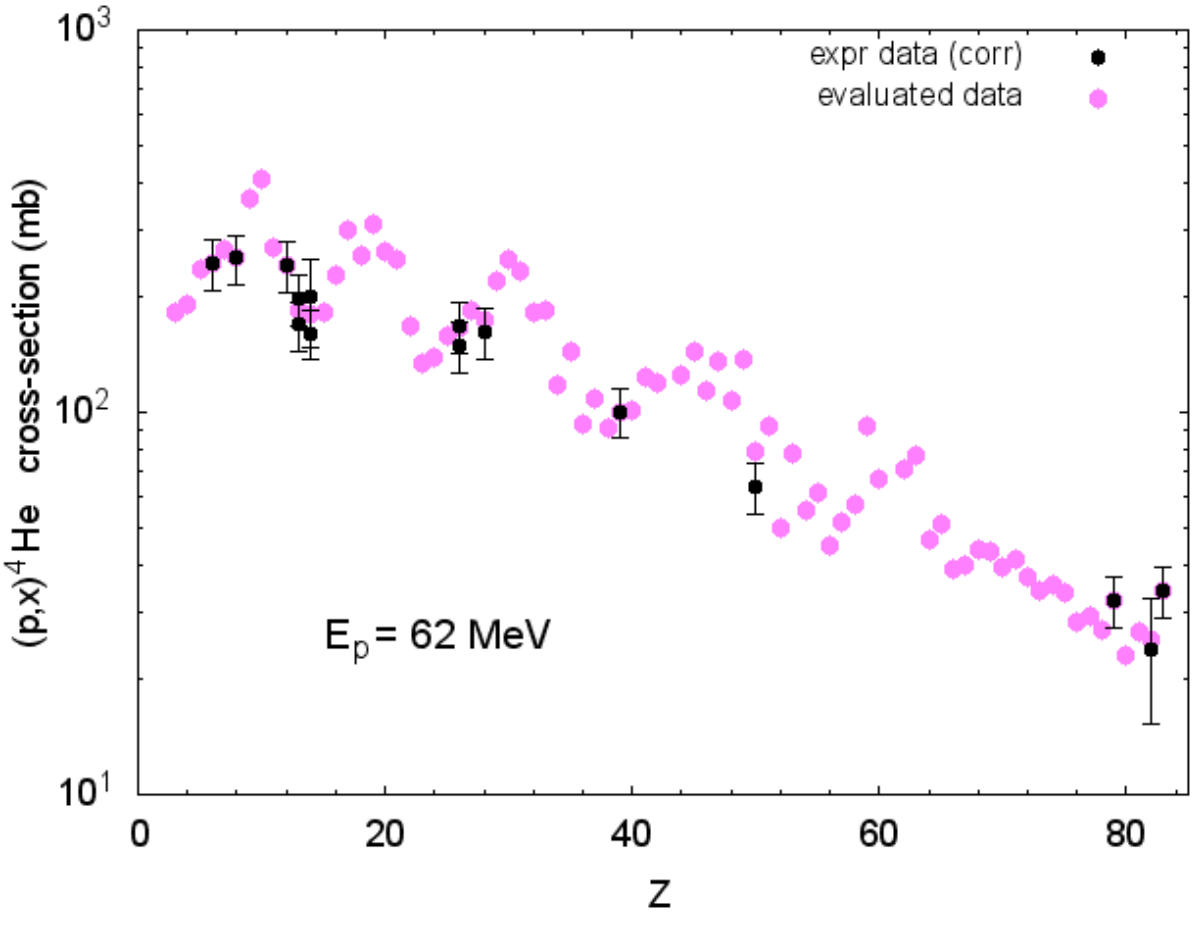

(p,x)3He cross-section (mb)
10^2
10^1
E_p = 1.2 GeV
expr data (corr)
evaluated data
0
20
40
60
80
Z

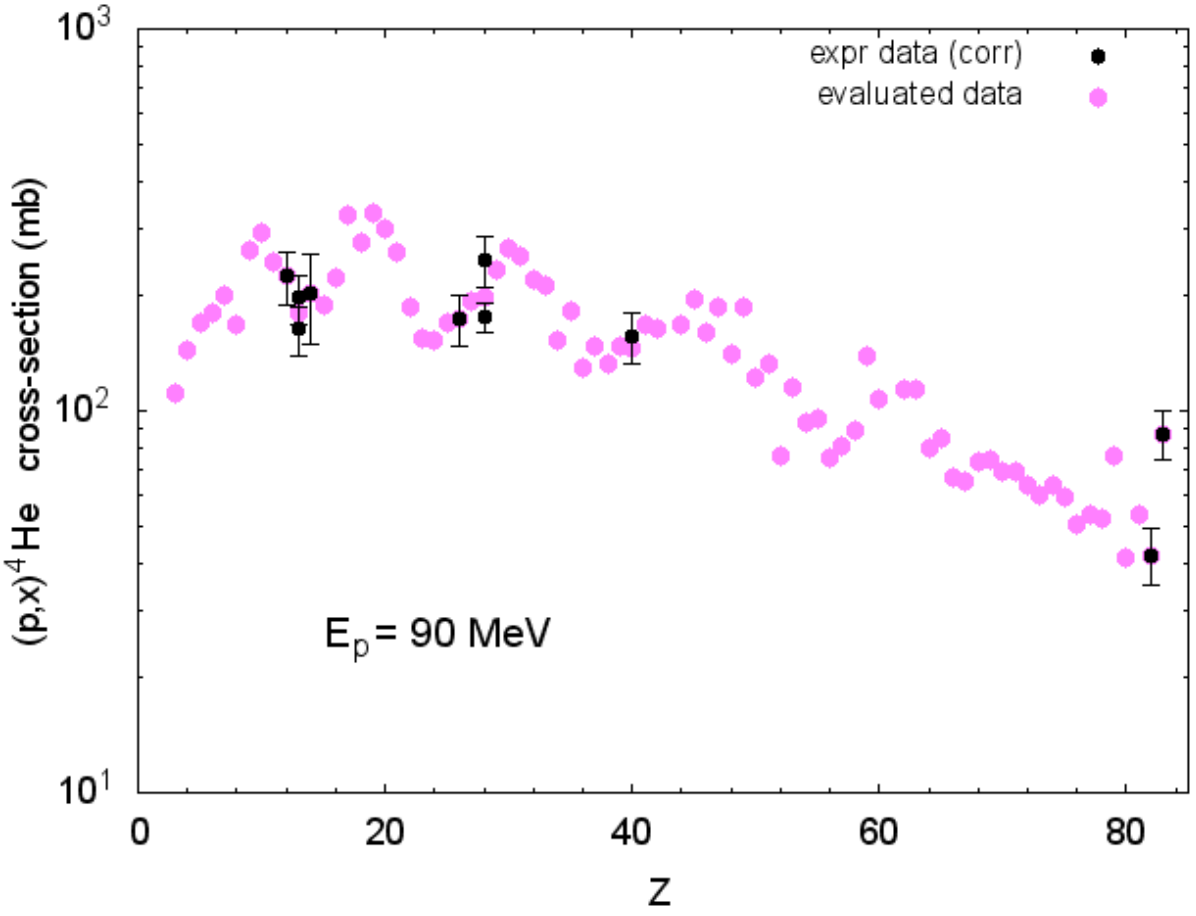

(p,x)4He cross-section (mb)
10^3
10^2
10^1
expr data (corr)
evaluated data
E_p = 62 MeV
0
20
40
60
80
Z

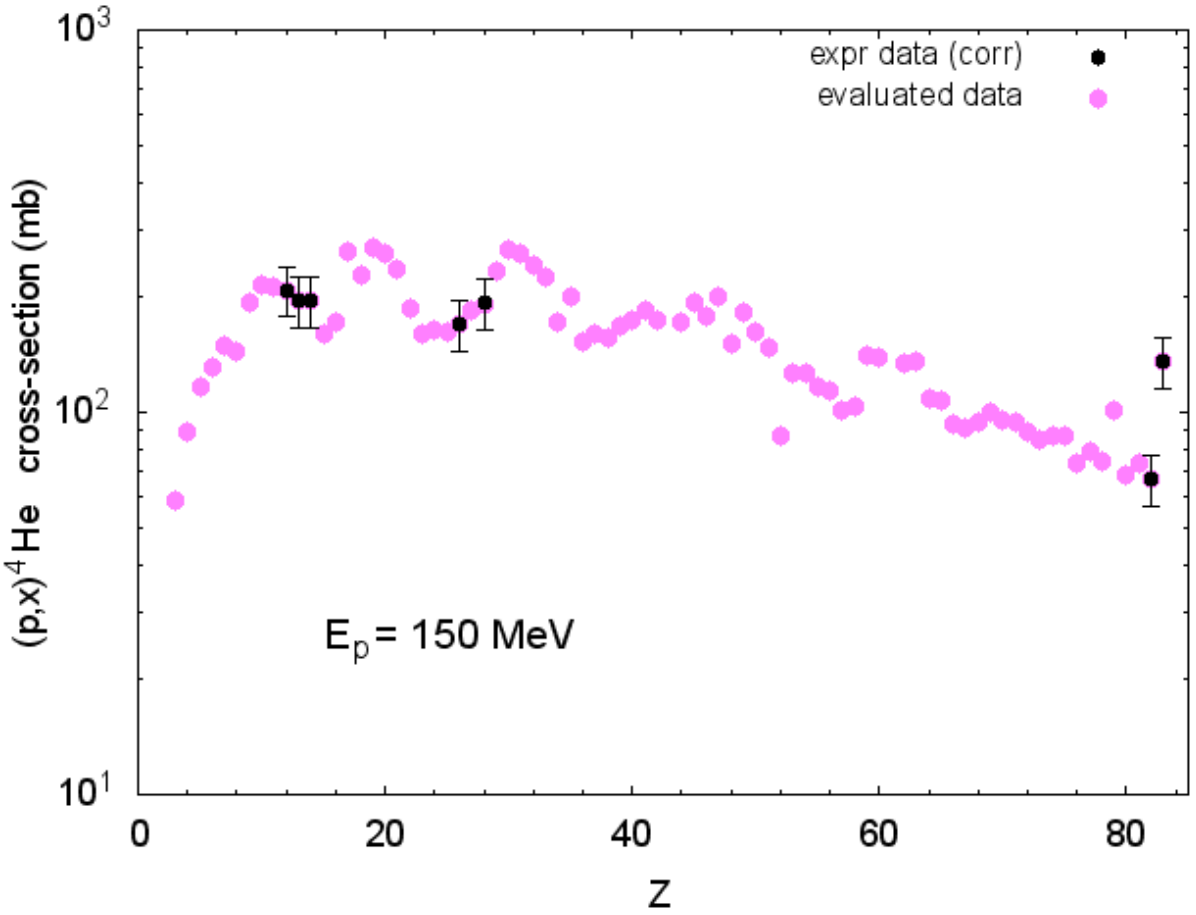

expr data (corr)
evaluated data
E_p = 90 MeV
(p,x)^{4}He cross-section (mb)
Z
10^3
10^2
10^1
0
20
40
60
80

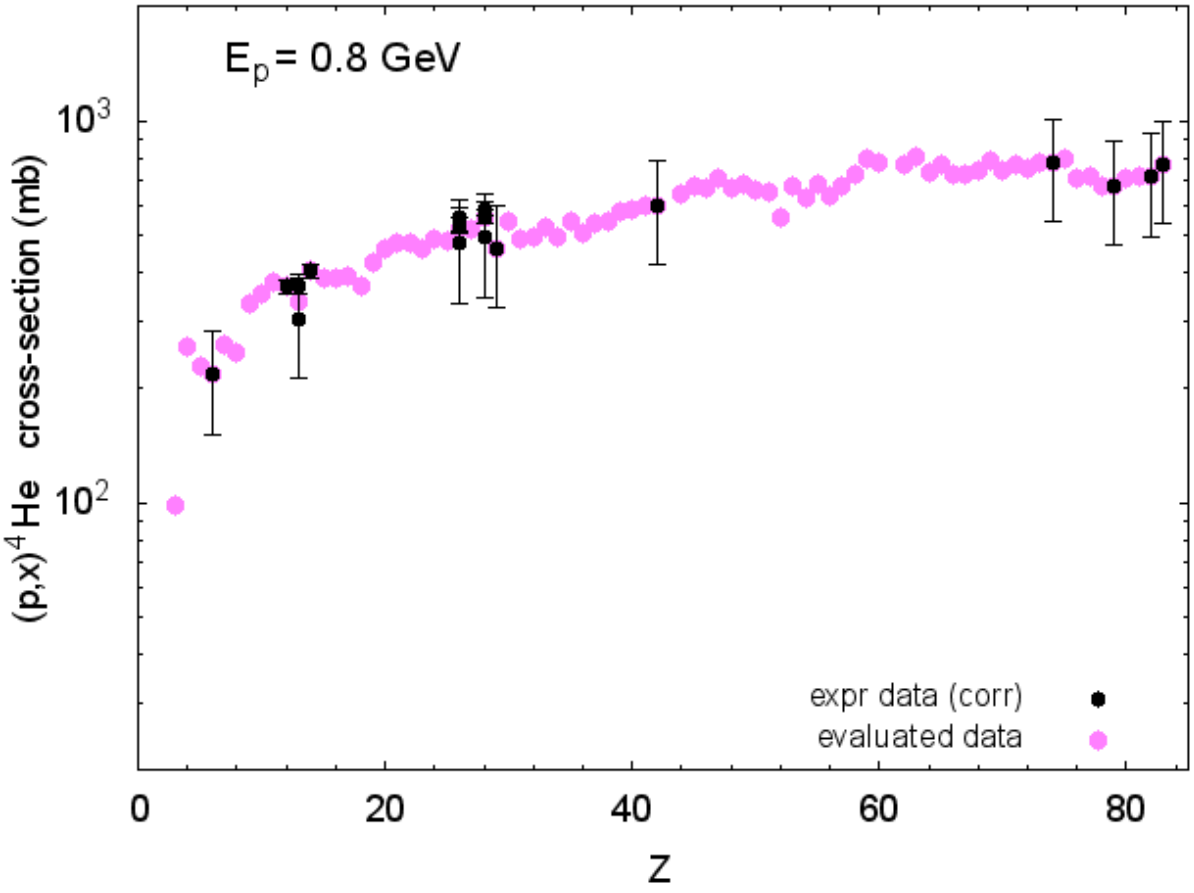

expr data (corr)
evaluated data
E_p = 150 MeV
(p,x)^{4}He cross-section (mb)
Z
10^3
10^2
10^1
0
20
40
60
80

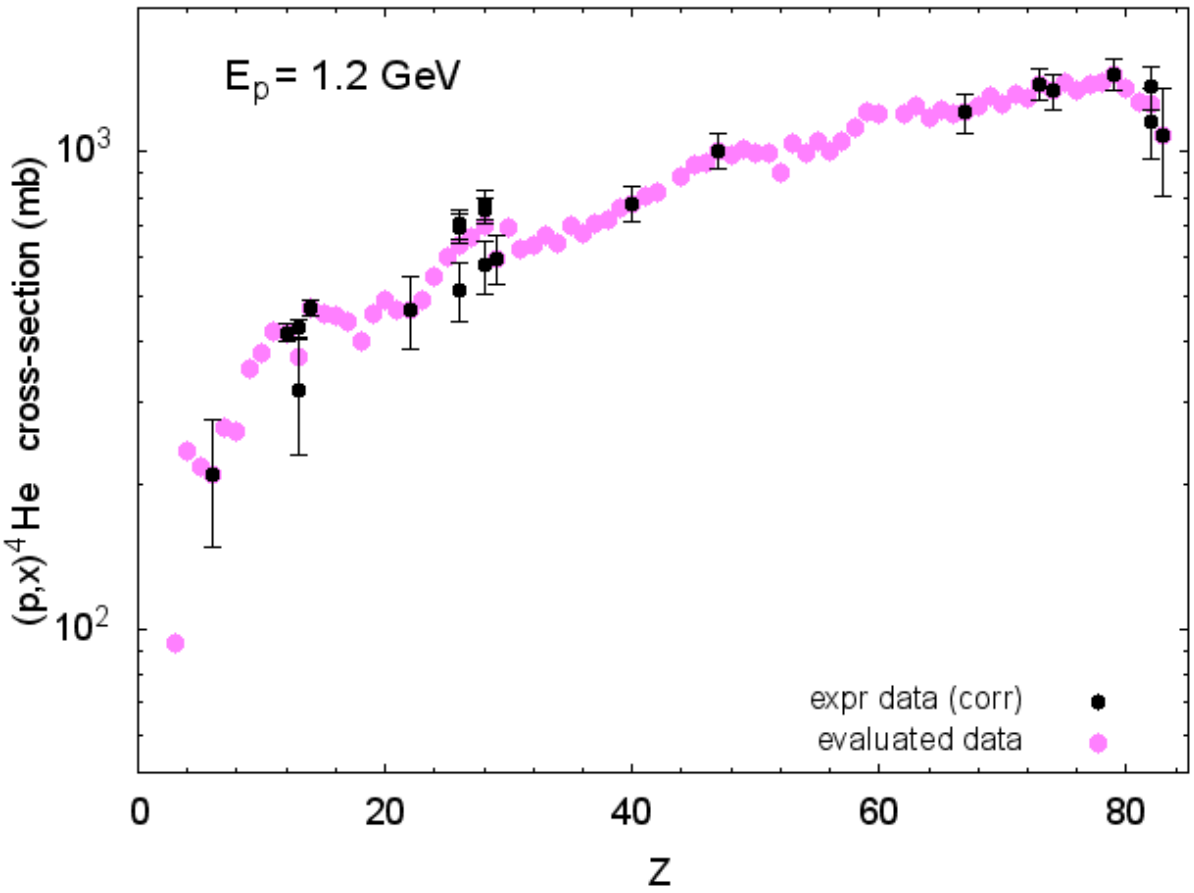

E_p = 1.2 GeV
10^3
10^2
$(p,x)^4$He cross-section (mb)
expr data (corr)
evaluated data
0
20
40
60
80
Z


10^3
10^2
10^1
$(p,x)^4$He cross-section (mb)
expr data (corr)
evaluated data
E_p = 62 MeV
0
20
40
60
80
Z


expr data (corr)
evaluated data
E_p = 90 MeV
(p,x)^{4}He cross-section (mb)
Z
10^3
10^2
10^1
0
20
40
60
80


expr data (corr)
evaluated data
E_p = 150 MeV
(p,x)^{4}He cross-section (mb)
Z
10^3
10^2
10^1
0
20
40
60
80


E_p = 0.8 GeV
10^3
10^2
(p,x)^{4}He cross-section (mb)
expr data (corr)
evaluated data
0
20
40
60
80
Z


E_p = 1.2 GeV
10^3
10^2
(p,x)^{4}He cross-section (mb)
expr data (corr)
evaluated data
0
20
40
60
80
Z

Appendix E: Evaluated proton-, deuteron-, triton-, ^{3}He-, and α-particle-production cross-sections

Each record contains the information about the `reaction`, `the incident proton energy` (MeV), `the cross-section` (mb) and `the error` (mb).

Reaction	E(MeV)	XS(mb)	dXS(mb)
Li-7(p,x)H-1	62.0	1.574E+02	1.048E+01
Li-7(p,x)H-1	90.0	1.828E+02	9.133E+00
Li-7(p,x)H-1	1200.0	3.942E+02	1.498E+02
Li-7(p,x)H-2	62.0	1.049E+02	1.573E+01
Li-7(p,x)H-2	90.0	8.734E+01	1.074E+01
Li-7(p,x)H-2	1200.0	6.519E+01	2.265E+01
Li-7(p,x)H-3	62.0	4.689E+01	2.996E+01
Li-7(p,x)H-3	90.0	3.309E+01	1.616E+01
Li-7(p,x)H-3	150.0	1.330E+01	1.243E+01
Li-7(p,x)H-3	660.0	2.871E+01	1.336E+01
Li-7(p,x)H-3	1200.0	2.921E+01	1.749E+01
Li-7(p,x)He-3	62.0	2.523E+01	1.451E+01
Li-7(p,x)He-3	90.0	1.510E+01	6.098E+00
Li-7(p,x)He-3	150.0	8.551E+00	6.159E+00
Li-7(p,x)He-3	800.0	1.394E+01	1.062E+01
Li-7(p,x)He-3	1200.0	1.324E+01	1.165E+01
Li-7(p,x)He-4	62.0	1.833E+02	3.731E+01
Li-7(p,x)He-4	90.0	1.112E+02	8.120E+00
Li-7(p,x)He-4	150.0	5.847E+01	5.571E+00
Li-7(p,x)He-4	800.0	9.832E+01	6.301E+01
Li-7(p,x)He-4	1200.0	9.328E+01	5.738E+01
Be-9(p,x)H-1	62.0	2.110E+02	1.067E+01
Be-9(p,x)H-1	90.0	2.419E+02	7.559E+00
Be-9(p,x)H-1	1200.0	4.885E+02	1.728E+02
Be-9(p,x)H-2	62.0	8.857E+01	1.329E+01
Be-9(p,x)H-2	90.0	1.025E+02	8.080E+00
Be-9(p,x)H-2	1200.0	5.360E+01	8.142E+00
Be-9(p,x)H-3	62.0	4.971E+01	1.152E+01
Be-9(p,x)H-3	90.0	5.014E+01	1.142E+01
Be-9(p,x)H-3	150.0	2.538E+01	1.539E+01
Be-9(p,x)H-3	660.0	3.410E+01	1.344E+01
Be-9(p,x)H-3	1200.0	3.315E+01	1.281E+01
Be-9(p,x)He-3	62.0	3.160E+01	6.906E+00
Be-9(p,x)He-3	90.0	2.669E+01	7.680E+00
Be-9(p,x)He-3	150.0	1.720E+01	7.903E+00
Be-9(p,x)He-3	800.0	2.160E+01	7.559E+00
Be-9(p,x)He-3	1200.0	2.038E+01	7.913E+00
Be-9(p,x)He-4	62.0	1.916E+02	2.181E+01
Be-9(p,x)He-4	90.0	1.436E+02	3.184E+01
Be-9(p,x)He-4	150.0	8.869E+01	1.475E+01
Be-9(p,x)He-4	800.0	2.561E+02	7.697E+01
Be-9(p,x)He-4	1200.0	2.359E+02	6.371E+01
B-10(p,x)H-1	62.0	3.004E+02	3.021E+01
B-10(p,x)H-1	90.0	3.376E+02	1.696E+01
B-10(p,x)H-1	1200.0	5.987E+02	2.080E+02
B-10(p,x)H-2	62.0	9.457E+01	1.419E+01
B-10(p,x)H-2	90.0	9.769E+01	1.673E+01
B-10(p,x)H-2	1200.0	6.044E+01	7.956E+00
B-10(p,x)H-3	62.0	2.237E+01	7.813E+00
B-10(p,x)H-3	90.0	2.561E+01	7.799E+00
B-10(p,x)H-3	150.0	1.787E+01	1.157E+01
B-10(p,x)H-3	660.0	4.413E+01	2.139E+01
B-10(p,x)H-3	1200.0	4.324E+01	1.886E+01
B-10(p,x)He-3	62.0	4.151E+01	6.177E+00
B-10(p,x)He-3	90.0	3.244E+01	6.601E+00
B-10(p,x)He-3	150.0	2.378E+01	1.074E+01
B-10(p,x)He-3	800.0	3.543E+01	3.567E-01
B-10(p,x)He-3	1200.0	3.503E+01	6.219E-01
B-10(p,x)He-4	62.0	2.252E+02	5.002E+01
B-10(p,x)He-4	90.0	1.682E+02	5.400E+01
B-10(p,x)He-4	150.0	1.102E+02	3.292E+01
B-10(p,x)He-4	800.0	3.009E+02	6.289E+01
B-10(p,x)He-4	1200.0	2.785E+02	5.558E+01
B-11(p,x)H-1	62.0	2.812E+02	1.824E+01
B-11(p,x)H-1	90.0	3.231E+02	2.815E+01
B-11(p,x)H-1	1200.0	5.890E+02	1.822E+02
B-11(p,x)H-2	62.0	1.093E+02	1.640E+01
B-11(p,x)H-2	90.0	1.106E+02	1.239E+01
B-11(p,x)H-2	1200.0	6.325E+01	1.718E+01
B-11(p,x)H-3	62.0	4.025E+01	5.135E+00
B-11(p,x)H-3	90.0	3.608E+01	2.774E+00
B-11(p,x)H-3	150.0	2.162E+01	9.229E+00
B-11(p,x)H-3	660.0	3.815E+01	7.911E+00
B-11(p,x)H-3	1200.0	3.898E+01	7.848E+00
B-11(p,x)He-3	62.0	2.433E+01	8.847E+00
B-11(p,x)He-3	90.0	1.786E+01	1.994E+00
B-11(p,x)He-3	150.0	1.524E+01	5.437E+00
B-11(p,x)He-3	800.0	3.044E+01	3.184E+00
B-11(p,x)He-3	1200.0	3.013E+01	3.555E+00
B-11(p,x)He-4	62.0	2.382E+02	2.255E+01
B-11(p,x)He-4	90.0	1.719E+02	4.393E+01
B-11(p,x)He-4	150.0	1.182E+02	2.935E+01
B-11(p,x)He-4	800.0	2.105E+02	2.276E+01
B-11(p,x)He-4	1200.0	2.036E+02	2.062E+01
C-12(p,x)H-1	62.0	3.579E+02	5.368E+01
C-12(p,x)H-1	90.0	4.140E+02	2.399E+01
C-12(p,x)H-1	1200.0	6.449E+02	1.509E+02
C-12(p,x)H-2	62.0	7.317E+01	1.098E+01
C-12(p,x)H-2	90.0	1.078E+02	1.203E+01
C-12(p,x)H-2	1200.0	6.415E+01	2.040E+01
C-12(p,x)H-3	62.0	2.191E+01	3.286E+00
C-12(p,x)H-3	90.0	2.409E+01	4.935E-01
C-12(p,x)H-3	150.0	1.515E+01	5.692E+00
C-12(p,x)H-3	660.0	3.378E+01	5.066E+00
C-12(p,x)H-3	1200.0	3.580E+01	5.370E+00
C-12(p,x)He-3	62.0	3.381E+01	5.071E+00
C-12(p,x)He-3	90.0	2.748E+01	1.824E+00
C-12(p,x)He-3	150.0	2.003E+01	4.904E+00
C-12(p,x)He-3	800.0	3.930E+01	5.895E+00
C-12(p,x)He-3	1200.0	4.000E+01	6.000E+00
C-12(p,x)He-4	62.0	2.457E+02	3.686E+01
C-12(p,x)He-4	90.0	1.792E+02	5.353E+01
C-12(p,x)He-4	150.0	1.309E+02	3.249E+01
C-12(p,x)He-4	800.0	2.160E+02	3.240E+01
C-12(p,x)He-4	1200.0	2.110E+02	3.165E+01
C-13(p,x)H-1	62.0	3.062E+02	1.631E+01
C-13(p,x)H-1	90.0	3.656E+02	2.724E+01
C-13(p,x)H-1	1200.0	6.352E+02	1.155E+02
C-13(p,x)H-2	62.0	7.337E+01	1.101E+01
C-13(p,x)H-2	90.0	1.106E+02	1.774E+01
C-13(p,x)H-2	1200.0	7.338E+01	2.682E+01
C-13(p,x)H-3	62.0	2.473E+01	3.996E+00
C-13(p,x)H-3	90.0	2.941E+01	2.549E+00
C-13(p,x)H-3	150.0	1.966E+01	9.201E+00
C-13(p,x)H-3	660.0	3.564E+01	1.175E+01
C-13(p,x)H-3	1200.0	3.886E+01	1.289E+01
C-13(p,x)He-3	62.0	1.610E+01	2.297E+00
C-13(p,x)He-3	90.0	1.555E+01	2.528E+00
C-13(p,x)He-3	150.0	1.444E+01	5.218E+00
C-13(p,x)He-3	800.0	3.207E+01	5.524E+00
C-13(p,x)He-3	1200.0	3.335E+01	4.829E+00
C-13(p,x)He-4	62.0	3.068E+02	2.028E+01
C-13(p,x)He-4	90.0	2.089E+02	5.084E+01
C-13(p,x)He-4	150.0	1.473E+02	2.948E+01
C-13(p,x)He-4	800.0	2.413E+02	3.531E+01

C-13(p,x)He-4	1200.0	2.357E+02	3.314E+01
N-14(p,x)H-1	62.0	4.559E+02	6.576E+00
N-14(p,x)H-1	90.0	5.194E+02	1.595E+01
N-14(p,x)H-1	1200.0	7.305E+02	1.203E+02
N-14(p,x)H-2	62.0	8.793E+01	1.319E+01
N-14(p,x)H-2	90.0	1.045E+02	1.475E+01
N-14(p,x)H-2	1200.0	8.052E+01	2.135E+01
N-14(p,x)H-3	62.0	1.057E+01	1.028E+00
N-14(p,x)H-3	90.0	1.543E+01	9.027E-01
N-14(p,x)H-3	150.0	1.362E+01	5.113E+00
N-14(p,x)H-3	660.0	3.180E+01	3.542E+00
N-14(p,x)H-3	1200.0	3.685E+01	3.391E+00
N-14(p,x)He-3	62.0	2.777E+01	8.255E+00
N-14(p,x)He-3	90.0	2.193E+01	2.469E+00
N-14(p,x)He-3	150.0	1.861E+01	4.151E+00
N-14(p,x)He-3	800.0	4.330E+01	3.991E-01
N-14(p,x)He-3	1200.0	4.544E+01	1.767E+00
N-14(p,x)He-4	62.0	2.652E+02	2.314E+01
N-14(p,x)He-4	90.0	1.998E+02	5.137E+01
N-14(p,x)He-4	150.0	1.494E+02	2.179E+01
N-14(p,x)He-4	800.0	2.602E+02	4.931E+01
N-14(p,x)He-4	1200.0	2.645E+02	4.814E+01
N-15(p,x)H-1	62.0	3.850E+02	1.875E+01
N-15(p,x)H-1	90.0	4.541E+02	3.173E+01
N-15(p,x)H-1	1200.0	7.102E+02	1.076E+02
N-15(p,x)H-2	62.0	9.808E+01	1.471E+01
N-15(p,x)H-2	90.0	1.106E+02	1.910E+01
N-15(p,x)H-2	1200.0	8.889E+01	2.449E+01
N-15(p,x)H-3	62.0	2.646E+01	2.307E+00
N-15(p,x)H-3	90.0	2.400E+01	4.702E+00
N-15(p,x)H-3	150.0	1.622E+01	3.260E+00
N-15(p,x)H-3	660.0	3.367E+01	1.014E+01
N-15(p,x)H-3	1200.0	4.032E+01	1.098E+01
N-15(p,x)He-3	62.0	1.854E+01	6.466E+00
N-15(p,x)He-3	90.0	1.309E+01	1.269E+00
N-15(p,x)He-3	150.0	1.219E+01	1.256E+00
N-15(p,x)He-3	800.0	3.432E+01	4.146E+00
N-15(p,x)He-3	1200.0	3.715E+01	3.321E+00
N-15(p,x)He-4	62.0	2.066E+02	2.866E+01
N-15(p,x)He-4	90.0	1.593E+02	2.763E+01
N-15(p,x)He-4	150.0	1.350E+02	2.717E+01
N-15(p,x)He-4	800.0	2.432E+02	4.419E+01
N-15(p,x)He-4	1200.0	2.505E+02	4.108E+01
O-16(p,x)H-1	62.0	4.941E+02	7.412E+01
O-16(p,x)H-1	90.0	5.923E+02	1.129E+01
O-16(p,x)H-1	1200.0	8.157E+02	1.225E+02
O-16(p,x)H-2	62.0	8.331E+01	1.250E+01
O-16(p,x)H-2	90.0	1.090E+02	1.385E+01
O-16(p,x)H-2	1200.0	9.605E+01	1.637E+01
O-16(p,x)H-3	62.0	1.551E+01	2.326E+00
O-16(p,x)H-3	90.0	1.679E+01	9.518E-02
O-16(p,x)H-3	150.0	1.181E+01	2.211E+00
O-16(p,x)H-3	660.0	2.979E+01	4.523E+00
O-16(p,x)H-3	1200.0	3.751E+01	5.380E+00
O-16(p,x)He-3	62.0	2.651E+01	3.977E+00
O-16(p,x)He-3	90.0	2.032E+01	1.310E+00
O-16(p,x)He-3	150.0	1.627E+01	1.075E+00
O-16(p,x)He-3	800.0	4.247E+01	1.633E+00
O-16(p,x)He-3	1200.0	4.590E+01	3.052E+00
O-16(p,x)He-4	62.0	2.527E+02	3.790E+01
O-16(p,x)He-4	90.0	1.683E+02	1.850E+01
O-16(p,x)He-4	150.0	1.442E+02	2.324E+01
O-16(p,x)He-4	800.0	2.479E+02	5.162E+01
O-16(p,x)He-4	1200.0	2.584E+02	4.707E+01
O-17(p,x)H-1	62.0	4.202E+02	6.060E+00
O-17(p,x)H-1	90.0	4.999E+02	5.525E+00
O-17(p,x)H-1	1200.0	7.919E+02	8.362E+01
O-17(p,x)H-2	62.0	1.235E+02	1.853E+01
O-17(p,x)H-2	90.0	1.232E+02	8.902E+00
O-17(p,x)H-2	1200.0	1.053E+02	1.927E+01
O-17(p,x)H-3	62.0	2.471E+01	3.853E+00
O-17(p,x)H-3	90.0	2.532E+01	2.837E+00
O-17(p,x)H-3	150.0	1.727E+01	5.096E+00
O-17(p,x)H-3	660.0	3.308E+01	9.122E+00
O-17(p,x)H-3	1200.0	4.268E+01	9.845E+00
O-17(p,x)He-3	62.0	1.878E+01	3.622E+00
O-17(p,x)He-3	90.0	1.561E+01	2.296E+00
O-17(p,x)He-3	150.0	1.358E+01	2.901E+00
O-17(p,x)He-3	800.0	3.532E+01	2.642E+00
O-17(p,x)He-3	1200.0	3.913E+01	2.129E+00
O-17(p,x)He-4	62.0	3.441E+02	4.155E+01
O-17(p,x)He-4	90.0	2.308E+02	4.845E+01
O-17(p,x)He-4	150.0	1.698E+02	1.764E+01
O-17(p,x)He-4	800.0	2.765E+02	7.506E+01
O-17(p,x)He-4	1200.0	2.905E+02	7.103E+01
O-18(p,x)H-1	62.0	3.592E+02	2.349E+01
O-18(p,x)H-1	90.0	4.374E+02	1.491E+01
O-18(p,x)H-1	1200.0	7.748E+02	6.550E+01
O-18(p,x)H-2	62.0	1.149E+02	1.723E+01
O-18(p,x)H-2	90.0	1.176E+02	1.040E+01
O-18(p,x)H-2	1200.0	1.125E+02	2.181E+01
O-18(p,x)H-3	62.0	3.919E+01	3.551E+00
O-18(p,x)H-3	90.0	3.740E+01	5.610E+00
O-18(p,x)H-3	150.0	2.185E+01	6.148E+00
O-18(p,x)H-3	660.0	3.885E+01	1.133E+01
O-18(p,x)H-3	1200.0	4.925E+01	1.372E+01
O-18(p,x)He-3	62.0	1.055E+01	3.596E+00
O-18(p,x)He-3	90.0	9.808E+00	1.716E+00
O-18(p,x)He-3	150.0	9.444E+00	1.810E+00
O-18(p,x)He-3	800.0	2.922E+01	5.478E+00
O-18(p,x)He-3	1200.0	3.290E+01	5.867E+00
O-18(p,x)He-4	62.0	3.100E+02	5.439E+01
O-18(p,x)He-4	90.0	2.269E+02	6.898E+01
O-18(p,x)He-4	150.0	1.636E+02	1.809E+01
O-18(p,x)He-4	800.0	2.801E+02	8.014E+01
O-18(p,x)He-4	1200.0	2.966E+02	8.093E+01
F-19(p,x)H-1	62.0	4.859E+02	4.024E+01
F-19(p,x)H-1	90.0	5.656E+02	3.452E+01
F-19(p,x)H-1	1200.0	8.751E+02	7.174E+01
F-19(p,x)H-2	62.0	1.101E+02	1.651E+01
F-19(p,x)H-2	90.0	1.194E+02	9.583E+00
F-19(p,x)H-2	1200.0	1.256E+02	1.578E+01
F-19(p,x)H-3	62.0	2.640E+01	4.957E+00
F-19(p,x)H-3	90.0	2.649E+01	2.134E+00
F-19(p,x)H-3	150.0	1.741E+01	5.078E+00
F-19(p,x)H-3	660.0	3.495E+01	6.450E+00
F-19(p,x)H-3	1200.0	4.671E+01	8.641E+00
F-19(p,x)He-3	62.0	2.117E+01	6.114E+00
F-19(p,x)He-3	90.0	1.652E+01	1.861E+00
F-19(p,x)He-3	150.0	1.416E+01	2.128E+00
F-19(p,x)He-3	800.0	3.802E+01	1.610E+00
F-19(p,x)He-3	1200.0	4.261E+01	1.202E+00
F-19(p,x)He-4	62.0	3.636E+02	5.302E+01
F-19(p,x)He-4	90.0	2.628E+02	7.458E+01
F-19(p,x)He-4	150.0	1.937E+02	3.392E+01
F-19(p,x)He-4	800.0	3.325E+02	4.822E+01
F-19(p,x)He-4	1200.0	3.520E+02	4.725E+01
Ne-20(p,x)H-1	62.0	6.058E+02	2.684E+01
Ne-20(p,x)H-1	90.0	6.915E+02	2.178E+01
Ne-20(p,x)H-1	1200.0	1.006E+03	8.749E+01
Ne-20(p,x)H-2	62.0	8.759E+01	1.314E+01
Ne-20(p,x)H-2	90.0	1.047E+02	6.815E+00
Ne-20(p,x)H-2	1200.0	1.370E+02	8.090E+00
Ne-20(p,x)H-3	62.0	1.175E+01	1.297E+00
Ne-20(p,x)H-3	90.0	1.573E+01	1.145E+00
Ne-20(p,x)H-3	150.0	1.189E+01	2.985E+00
Ne-20(p,x)H-3	660.0	3.141E+01	2.352E+00
Ne-20(p,x)H-3	1200.0	4.301E+01	5.582E+00
Ne-20(p,x)He-3	62.0	2.023E+01	2.831E+00
Ne-20(p,x)He-3	90.0	1.975E+01	3.971E+00
Ne-20(p,x)He-3	150.0	1.774E+01	4.048E+00
Ne-20(p,x)He-3	800.0	4.742E+01	5.577E+00
Ne-20(p,x)He-3	1200.0	5.246E+01	5.603E+00
Ne-20(p,x)He-4	62.0	4.152E+02	7.591E+01
Ne-20(p,x)He-4	90.0	2.940E+02	7.129E+01
Ne-20(p,x)He-4	150.0	2.160E+02	3.896E+01
Ne-20(p,x)He-4	800.0	3.541E+02	2.397E+01
Ne-20(p,x)He-4	1200.0	3.784E+02	2.595E+01
Ne-21(p,x)H-1	62.0	5.010E+02	3.684E+01
Ne-21(p,x)H-1	90.0	5.787E+02	3.554E+01
Ne-21(p,x)H-1	1200.0	9.673E+02	5.439E+01
Ne-21(p,x)H-2	62.0	9.374E+01	1.406E+01
Ne-21(p,x)H-2	90.0	9.820E+01	1.473E+01
Ne-21(p,x)H-2	1200.0	1.456E+02	9.489E+00
Ne-21(p,x)H-3	62.0	1.639E+01	2.453E+00
Ne-21(p,x)H-3	90.0	1.990E+01	1.818E+00
Ne-21(p,x)H-3	150.0	1.545E+01	4.498E+00
Ne-21(p,x)H-3	660.0	3.790E+01	2.058E+00
Ne-21(p,x)H-3	1200.0	5.049E+01	6.004E+00
Ne-21(p,x)He-3	62.0	1.346E+01	2.646E+00

Ne-21(p,x)He-3	90.0	1.345E+01	1.753E+00
Ne-21(p,x)He-3	150.0	1.337E+01	2.693E+00
Ne-21(p,x)He-3	800.0	4.000E+01	8.857E-02
Ne-21(p,x)He-3	1200.0	4.417E+01	8.353E-01
Ne-21(p,x)He-4	62.0	4.427E+02	7.597E+01
Ne-21(p,x)He-4	90.0	3.281E+02	7.666E+01
Ne-21(p,x)He-4	150.0	2.377E+02	3.593E+01
Ne-21(p,x)He-4	800.0	3.657E+02	2.547E+01
Ne-21(p,x)He-4	1200.0	3.940E+02	3.127E+01
Ne-22(p,x)H-1	62.0	4.384E+02	3.925E+01
Ne-22(p,x)H-1	90.0	5.034E+02	2.975E+01
Ne-22(p,x)H-1	1200.0	9.459E+02	3.523E+01
Ne-22(p,x)H-2	62.0	8.633E+01	1.295E+01
Ne-22(p,x)H-2	90.0	8.583E+01	1.288E+01
Ne-22(p,x)H-2	1200.0	1.530E+02	1.118E+01
Ne-22(p,x)H-3	62.0	2.351E+01	1.642E+00
Ne-22(p,x)H-3	90.0	2.620E+01	3.853E+00
Ne-22(p,x)H-3	150.0	1.782E+01	3.251E+00
Ne-22(p,x)H-3	660.0	4.399E+01	2.872E+00
Ne-22(p,x)H-3	1200.0	5.916E+01	5.512E+00
Ne-22(p,x)He-3	62.0	7.847E+00	1.708E+00
Ne-22(p,x)He-3	90.0	8.517E+00	9.176E-01
Ne-22(p,x)He-3	150.0	8.877E+00	6.664E-01
Ne-22(p,x)He-3	800.0	3.259E+01	3.878E+00
Ne-22(p,x)He-3	1200.0	3.790E+01	5.190E+00
Ne-22(p,x)He-4	62.0	3.241E+02	5.636E+01
Ne-22(p,x)He-4	90.0	2.709E+02	6.311E+01
Ne-22(p,x)He-4	150.0	2.120E+02	2.572E+01
Ne-22(p,x)He-4	800.0	3.469E+02	3.792E+01
Ne-22(p,x)He-4	1200.0	3.815E+02	4.522E+01
Na-23(p,x)H-1	62.0	6.324E+02	3.512E+01
Na-23(p,x)H-1	90.0	6.710E+02	3.650E+01
Na-23(p,x)H-1	1200.0	1.077E+03	3.515E+01
Na-23(p,x)H-2	62.0	8.564E+01	1.285E+01
Na-23(p,x)H-2	90.0	8.864E+01	1.330E+01
Na-23(p,x)H-2	1200.0	1.670E+02	6.876E+00
Na-23(p,x)H-3	62.0	1.553E+01	1.062E+00
Na-23(p,x)H-3	90.0	1.850E+01	2.817E+00
Na-23(p,x)H-3	150.0	1.370E+01	8.131E-01
Na-23(p,x)H-3	660.0	3.876E+01	8.396E-01
Na-23(p,x)H-3	1200.0	5.474E+01	3.097E+00
Na-23(p,x)He-3	62.0	1.290E+01	2.859E+00
Na-23(p,x)He-3	90.0	1.233E+01	7.690E-01
Na-23(p,x)He-3	150.0	1.183E+01	5.206E-01
Na-23(p,x)He-3	800.0	3.922E+01	1.877E+00
Na-23(p,x)He-3	1200.0	4.533E+01	2.807E+00
Na-23(p,x)He-4	62.0	2.689E+02	3.654E+01
Na-23(p,x)He-4	90.0	2.466E+02	3.749E+01
Na-23(p,x)He-4	150.0	2.125E+02	2.470E+01
Na-23(p,x)He-4	800.0	3.785E+02	1.715E+01
Na-23(p,x)He-4	1200.0	4.197E+02	2.218E+01
Mg-24(p,x)H-1	62.0	8.629E+02	3.695E+01
Mg-24(p,x)H-1	90.0	8.928E+02	3.882E+01
Mg-24(p,x)H-1	1200.0	1.212E+03	7.154E+01
Mg-24(p,x)H-2	62.0	7.606E+01	1.141E+01
Mg-24(p,x)H-2	90.0	8.412E+01	1.262E+01
Mg-24(p,x)H-2	1200.0	1.769E+02	5.400E+00
Mg-24(p,x)H-3	62.0	7.119E+00	6.369E-01
Mg-24(p,x)H-3	90.0	1.194E+01	1.239E+00
Mg-24(p,x)H-3	150.0	1.018E+01	5.859E-01
Mg-24(p,x)H-3	660.0	3.359E+01	1.875E-01
Mg-24(p,x)H-3	1200.0	5.034E+01	7.008E-01
Mg-24(p,x)He-3	62.0	1.188E+01	1.782E+00
Mg-24(p,x)He-3	90.0	1.438E+01	2.157E+00
Mg-24(p,x)He-3	150.0	1.464E+01	2.195E+00
Mg-24(p,x)He-3	800.0	4.397E+01	6.596E+00
Mg-24(p,x)He-3	1200.0	5.031E+01	7.547E+00
Mg-24(p,x)He-4	62.0	2.497E+02	3.745E+01
Mg-24(p,x)He-4	90.0	2.312E+02	3.468E+01
Mg-24(p,x)He-4	150.0	2.131E+02	3.196E+01
Mg-24(p,x)He-4	800.0	3.738E+02	5.608E+01
Mg-24(p,x)He-4	1200.0	4.223E+02	6.334E+01
Mg-25(p,x)H-1	62.0	7.010E+02	1.014E+01
Mg-25(p,x)H-1	90.0	7.274E+02	1.509E+01
Mg-25(p,x)H-1	1200.0	1.141E+03	7.630E+01
Mg-25(p,x)H-2	62.0	9.823E+01	1.473E+01
Mg-25(p,x)H-2	90.0	9.496E+01	1.424E+01
Mg-25(p,x)H-2	1200.0	1.860E+02	7.222E-01
Mg-25(p,x)H-3	62.0	1.195E+01	1.467E+00
Mg-25(p,x)H-3	90.0	1.543E+01	2.009E-01
Mg-25(p,x)H-3	150.0	1.291E+01	6.823E-01
Mg-25(p,x)H-3	660.0	3.959E+01	7.027E-01
Mg-25(p,x)H-3	1200.0	5.773E+01	9.450E-02
Mg-25(p,x)He-3	62.0	1.125E+01	1.687E+00
Mg-25(p,x)He-3	90.0	1.227E+01	1.840E+00
Mg-25(p,x)He-3	150.0	1.204E+01	1.807E+00
Mg-25(p,x)He-3	800.0	3.941E+01	5.911E+00
Mg-25(p,x)He-3	1200.0	4.585E+01	6.878E+00
Mg-25(p,x)He-4	62.0	2.490E+02	3.735E+01
Mg-25(p,x)He-4	90.0	2.300E+02	3.449E+01
Mg-25(p,x)He-4	150.0	2.118E+02	3.177E+01
Mg-25(p,x)He-4	800.0	3.559E+02	5.339E+01
Mg-25(p,x)He-4	1200.0	4.096E+02	6.144E+01
Mg-26(p,x)H-1	62.0	5.824E+02	1.874E+01
Mg-26(p,x)H-1	90.0	6.215E+02	7.701E+00
Mg-26(p,x)H-1	1200.0	1.115E+03	4.213E+01
Mg-26(p,x)H-2	62.0	8.631E+01	1.295E+01
Mg-26(p,x)H-2	90.0	8.618E+01	1.293E+01
Mg-26(p,x)H-2	1200.0	1.936E+02	1.914E+00
Mg-26(p,x)H-3	62.0	1.763E+01	7.013E-01
Mg-26(p,x)H-3	90.0	2.091E+01	3.207E+00
Mg-26(p,x)H-3	150.0	1.500E+01	6.697E-01
Mg-26(p,x)H-3	660.0	4.605E+01	1.698E+00
Mg-26(p,x)H-3	1200.0	6.590E+01	1.372E+00
Mg-26(p,x)He-3	62.0	7.168E+00	1.075E+00
Mg-26(p,x)He-3	90.0	8.304E+00	1.245E+00
Mg-26(p,x)He-3	150.0	8.493E+00	1.274E+00
Mg-26(p,x)He-3	800.0	3.474E+01	5.211E+00
Mg-26(p,x)He-3	1200.0	4.153E+01	6.229E+00
Mg-26(p,x)He-4	62.0	1.838E+02	2.756E+01
Mg-26(p,x)He-4	90.0	1.815E+02	2.722E+01
Mg-26(p,x)He-4	150.0	1.774E+02	2.661E+01
Mg-26(p,x)He-4	800.0	3.370E+02	5.055E+01
Mg-26(p,x)He-4	1200.0	3.950E+02	5.925E+01
Al-27(p,x)H-1	62.0	7.745E+02	1.162E+02
Al-27(p,x)H-1	90.0	7.870E+02	1.181E+02
Al-27(p,x)H-1	1200.0	1.308E+03	1.963E+02
Al-27(p,x)H-2	62.0	9.011E+01	1.352E+01
Al-27(p,x)H-2	90.0	9.490E+01	1.423E+01
Al-27(p,x)H-2	1200.0	2.097E+02	3.145E+01
Al-27(p,x)H-3	62.0	1.165E+01	1.747E+00
Al-27(p,x)H-3	90.0	1.473E+01	2.210E+00
Al-27(p,x)H-3	150.0	1.220E+01	1.830E+00
Al-27(p,x)H-3	660.0	4.265E+01	6.397E+00
Al-27(p,x)H-3	1200.0	6.280E+01	9.420E+00
Al-27(p,x)He-3	62.0	1.076E+01	1.614E+00
Al-27(p,x)He-3	90.0	1.309E+01	1.964E+00
Al-27(p,x)He-3	150.0	1.390E+01	2.085E+00
Al-27(p,x)He-3	800.0	4.080E+01	6.120E+00
Al-27(p,x)He-3	1200.0	4.935E+01	7.403E+00
Al-27(p,x)He-4	62.0	1.838E+02	2.757E+01
Al-27(p,x)He-4	90.0	1.805E+02	2.707E+01
Al-27(p,x)He-4	150.0	1.966E+02	2.949E+01
Al-27(p,x)He-4	800.0	3.375E+02	5.062E+01
Al-27(p,x)He-4	1200.0	3.718E+02	5.576E+01
Si-28(p,x)H-1	62.0	8.661E+02	1.299E+02
Si-28(p,x)H-1	90.0	9.812E+02	6.111E+00
Si-28(p,x)H-1	1200.0	1.448E+03	3.051E+01
Si-28(p,x)H-2	62.0	7.471E+01	1.121E+01
Si-28(p,x)H-2	90.0	8.039E+01	1.206E+01
Si-28(p,x)H-2	1200.0	2.134E+02	2.888E+00
Si-28(p,x)H-3	62.0	9.915E+00	1.487E+00
Si-28(p,x)H-3	90.0	1.139E+01	1.210E+00
Si-28(p,x)H-3	150.0	9.073E+00	3.379E-01
Si-28(p,x)H-3	660.0	3.590E+01	5.385E+00
Si-28(p,x)H-3	1200.0	5.535E+01	2.470E+00
Si-28(p,x)He-3	62.0	1.800E+01	2.700E+00
Si-28(p,x)He-3	90.0	1.762E+01	2.643E+00
Si-28(p,x)He-3	150.0	1.879E+01	2.819E+00
Si-28(p,x)He-3	800.0	5.494E+01	8.240E+00
Si-28(p,x)He-3	1200.0	6.742E+01	1.011E+01
Si-28(p,x)He-4	62.0	1.815E+02	2.723E+01
Si-28(p,x)He-4	90.0	2.042E+02	3.063E+01
Si-28(p,x)He-4	150.0	1.974E+02	2.961E+01
Si-28(p,x)He-4	800.0	4.066E+02	6.100E+01
Si-28(p,x)He-4	1200.0	4.711E+02	7.067E+01
Si-29(p,x)H-1	62.0	7.718E+02	1.158E+02
Si-29(p,x)H-1	90.0	8.930E+02	1.851E+01
Si-29(p,x)H-1	1200.0	1.371E+03	3.213E+01
Si-29(p,x)H-2	62.0	9.133E+01	1.370E+01

Si-29(p,x)H-2	90.0	9.107E+01	1.366E+01
Si-29(p,x)H-2	1200.0	2.201E+02	4.000E+00
Si-29(p,x)H-3	62.0	1.601E+01	2.402E+00
Si-29(p,x)H-3	90.0	1.452E+01	2.519E+00
Si-29(p,x)H-3	150.0	1.115E+01	4.374E-01
Si-29(p,x)H-3	660.0	4.117E+01	6.176E+00
Si-29(p,x)H-3	1200.0	6.228E+01	2.252E+00
Si-29(p,x)He-3	62.0	1.677E+01	2.515E+00
Si-29(p,x)He-3	90.0	1.514E+01	2.272E+00
Si-29(p,x)He-3	150.0	1.511E+01	2.266E+00
Si-29(p,x)He-3	800.0	4.912E+01	7.368E+00
Si-29(p,x)He-3	1200.0	6.112E+01	9.167E+00
Si-29(p,x)He-4	62.0	1.842E+02	2.763E+01
Si-29(p,x)He-4	90.0	2.018E+02	3.027E+01
Si-29(p,x)He-4	150.0	1.832E+02	2.748E+01
Si-29(p,x)He-4	800.0	3.954E+02	5.931E+01
Si-29(p,x)He-4	1200.0	4.667E+02	7.000E+01
Si-30(p,x)H-1	62.0	6.171E+02	9.257E+01
Si-30(p,x)H-1	90.0	7.586E+02	8.051E+00
Si-30(p,x)H-1	1200.0	1.313E+03	5.176E+01
Si-30(p,x)H-2	62.0	8.676E+01	1.301E+01
Si-30(p,x)H-2	90.0	8.765E+01	1.315E+01
Si-30(p,x)H-2	1200.0	2.252E+02	8.354E+00
Si-30(p,x)H-3	62.0	2.508E+01	3.762E+00
Si-30(p,x)H-3	90.0	2.100E+01	4.458E-02
Si-30(p,x)H-3	150.0	1.291E+01	9.017E-01
Si-30(p,x)H-3	660.0	4.739E+01	7.108E+00
Si-30(p,x)H-3	1200.0	6.901E+01	2.276E+00
Si-30(p,x)He-3	62.0	1.172E+01	1.758E+00
Si-30(p,x)He-3	90.0	1.108E+01	1.662E+00
Si-30(p,x)He-3	150.0	1.164E+01	1.745E+00
Si-30(p,x)He-3	800.0	4.319E+01	6.478E+00
Si-30(p,x)He-3	1200.0	5.538E+01	8.308E+00
Si-30(p,x)He-4	62.0	1.497E+02	2.246E+01
Si-30(p,x)He-4	90.0	1.718E+02	2.576E+01
Si-30(p,x)He-4	150.0	1.581E+02	2.372E+01
Si-30(p,x)He-4	800.0	3.703E+02	5.554E+01
Si-30(p,x)He-4	1200.0	4.411E+02	6.616E+01
P-31(p,x)H-1	62.0	8.368E+02	2.509E+01
P-31(p,x)H-1	90.0	9.634E+02	3.653E+01
P-31(p,x)H-1	1200.0	1.515E+03	9.322E+01
P-31(p,x)H-2	62.0	1.121E+02	1.681E+01
P-31(p,x)H-2	90.0	1.149E+02	1.724E+01
P-31(p,x)H-2	1200.0	2.361E+02	1.740E+01
P-31(p,x)H-3	62.0	1.898E+01	2.099E+00
P-31(p,x)H-3	90.0	1.641E+01	2.473E+00
P-31(p,x)H-3	150.0	1.204E+01	2.625E+00
P-31(p,x)H-3	660.0	4.246E+01	3.325E+00
P-31(p,x)H-3	1200.0	6.392E+01	6.815E+00
P-31(p,x)He-3	62.0	2.272E+01	4.819E+00
P-31(p,x)He-3	90.0	1.805E+01	3.427E+00
P-31(p,x)He-3	150.0	1.768E+01	5.936E+00
P-31(p,x)He-3	800.0	5.142E+01	2.157E+00
P-31(p,x)He-3	1200.0	6.352E+01	1.240E-01
P-31(p,x)He-4	62.0	1.826E+02	1.929E+01
P-31(p,x)He-4	90.0	1.887E+02	1.622E+01
P-31(p,x)He-4	150.0	1.604E+02	2.115E+01
P-31(p,x)He-4	800.0	3.892E+02	1.507E+01
P-31(p,x)He-4	1200.0	4.555E+02	1.286E+01
S-32(p,x)H-1	62.0	1.094E+03	1.270E+01
S-32(p,x)H-1	90.0	1.205E+03	4.605E+01
S-32(p,x)H-1	1200.0	1.720E+03	1.127E+02
S-32(p,x)H-2	62.0	1.117E+02	1.675E+01
S-32(p,x)H-2	90.0	1.161E+02	1.741E+01
S-32(p,x)H-2	1200.0	2.431E+02	1.899E+01
S-32(p,x)H-3	62.0	1.092E+01	8.381E-01
S-32(p,x)H-3	90.0	1.259E+01	2.020E+00
S-32(p,x)H-3	150.0	9.818E+00	2.330E+00
S-32(p,x)H-3	660.0	3.699E+01	3.871E+00
S-32(p,x)H-3	1200.0	5.895E+01	8.012E+00
S-32(p,x)He-3	62.0	2.594E+01	4.137E+00
S-32(p,x)He-3	90.0	2.996E+01	7.759E+00
S-32(p,x)He-3	150.0	2.984E+01	8.149E+00
S-32(p,x)He-3	800.0	5.885E+01	2.262E-01
S-32(p,x)He-3	1200.0	7.060E+01	2.572E+00
S-32(p,x)He-4	62.0	2.236E+02	2.948E+01
S-32(p,x)He-4	90.0	2.162E+02	1.568E+01
S-32(p,x)He-4	150.0	1.683E+02	1.280E+01
S-32(p,x)He-4	800.0	3.864E+02	2.338E+01
S-32(p,x)He-4	1200.0	4.529E+02	2.326E+01
S-33(p,x)H-1	62.0	9.026E+02	2.076E+01
S-33(p,x)H-1	90.0	1.015E+03	2.202E+01
S-33(p,x)H-1	1200.0	1.640E+03	1.337E+02
S-33(p,x)H-2	62.0	1.304E+02	1.956E+01
S-33(p,x)H-2	90.0	1.311E+02	1.967E+01
S-33(p,x)H-2	1200.0	2.531E+02	2.426E+01
S-33(p,x)H-3	62.0	1.733E+01	3.476E+00
S-33(p,x)H-3	90.0	1.684E+01	5.004E+00
S-33(p,x)H-3	150.0	1.518E+01	3.601E+00
S-33(p,x)H-3	660.0	4.236E+01	4.642E+00
S-33(p,x)H-3	1200.0	6.520E+01	9.936E+00
S-33(p,x)He-3	62.0	2.244E+01	3.122E+00
S-33(p,x)He-3	90.0	2.638E+01	5.478E+00
S-33(p,x)He-3	150.0	4.013E+01	1.789E+01
S-33(p,x)He-3	800.0	5.368E+01	3.835E+00
S-33(p,x)He-3	1200.0	6.300E+01	2.517E+00
S-33(p,x)He-4	62.0	3.361E+02	8.109E+01
S-33(p,x)He-4	90.0	3.144E+02	5.629E+01
S-33(p,x)He-4	150.0	2.084E+02	2.238E+01
S-33(p,x)He-4	800.0	3.849E+02	3.405E+01
S-33(p,x)He-4	1200.0	4.469E+02	3.896E+01
S-34(p,x)H-1	62.0	7.196E+02	7.495E+00
S-34(p,x)H-1	90.0	8.378E+02	1.932E+01
S-34(p,x)H-1	1200.0	1.572E+03	1.414E+02
S-34(p,x)H-2	62.0	1.167E+02	1.750E+01
S-34(p,x)H-2	90.0	1.204E+02	1.806E+01
S-34(p,x)H-2	1200.0	2.590E+02	2.846E+01
S-34(p,x)H-3	62.0	2.450E+01	2.202E+00
S-34(p,x)H-3	90.0	2.255E+01	2.252E+00
S-34(p,x)H-3	150.0	1.791E+01	3.679E+00
S-34(p,x)H-3	660.0	4.862E+01	3.841E+00
S-34(p,x)H-3	1200.0	7.390E+01	9.707E+00
S-34(p,x)He-3	62.0	1.552E+01	3.017E+00
S-34(p,x)He-3	90.0	1.516E+01	3.451E+00
S-34(p,x)He-3	150.0	2.145E+01	5.411E+00
S-34(p,x)He-3	800.0	4.714E+01	4.292E+00
S-34(p,x)He-3	1200.0	5.710E+01	3.267E+00
S-34(p,x)He-4	62.0	3.061E+02	4.824E+01
S-34(p,x)He-4	90.0	3.491E+02	9.127E+01
S-34(p,x)He-4	150.0	2.746E+02	8.818E+01
S-34(p,x)He-4	800.0	3.745E+02	4.276E+01
S-34(p,x)He-4	1200.0	4.300E+02	5.087E+01
S-36(p,x)H-1	62.0	5.845E+02	3.514E+01
S-36(p,x)H-1	90.0	6.782E+02	1.722E+01
S-36(p,x)H-1	1200.0	1.484E+03	1.444E+02
S-36(p,x)H-2	62.0	1.081E+02	1.621E+01
S-36(p,x)H-2	90.0	1.142E+02	1.713E+01
S-36(p,x)H-2	1200.0	2.723E+02	3.497E+01
S-36(p,x)H-3	62.0	3.377E+01	5.752E+00
S-36(p,x)H-3	90.0	2.893E+01	5.998E+00
S-36(p,x)H-3	150.0	2.181E+01	5.871E+00
S-36(p,x)H-3	660.0	5.990E+01	2.660E+00
S-36(p,x)H-3	1200.0	9.107E+01	8.840E+00
S-36(p,x)He-3	62.0	1.045E+01	1.916E+00
S-36(p,x)He-3	90.0	1.033E+01	2.725E+00
S-36(p,x)He-3	150.0	1.142E+01	3.244E+00
S-36(p,x)He-3	800.0	3.961E+01	6.072E+00
S-36(p,x)He-3	1200.0	4.745E+01	5.641E+00
S-36(p,x)He-4	62.0	2.236E+02	6.166E+01
S-36(p,x)He-4	90.0	2.382E+02	3.649E+01
S-36(p,x)He-4	150.0	2.025E+02	3.660E+01
S-36(p,x)He-4	800.0	3.329E+02	5.467E+01
S-36(p,x)He-4	1200.0	3.816E+02	6.465E+01
Cl-35(p,x)H-1	62.0	9.825E+02	3.636E+01
Cl-35(p,x)H-1	90.0	1.081E+03	3.465E+01
Cl-35(p,x)H-1	1200.0	1.781E+03	1.572E+02
Cl-35(p,x)H-2	62.0	1.088E+02	1.633E+01
Cl-35(p,x)H-2	90.0	1.217E+02	1.825E+01
Cl-35(p,x)H-2	1200.0	2.705E+02	3.145E+01
Cl-35(p,x)H-3	62.0	1.708E+01	2.231E+00
Cl-35(p,x)H-3	90.0	1.649E+01	3.051E+00
Cl-35(p,x)H-3	150.0	1.307E+01	3.036E+00
Cl-35(p,x)H-3	660.0	4.315E+01	4.686E+00
Cl-35(p,x)H-3	1200.0	6.935E+01	1.147E+01
Cl-35(p,x)He-3	62.0	2.380E+01	5.328E+00
Cl-35(p,x)He-3	90.0	2.257E+01	3.832E+00
Cl-35(p,x)He-3	150.0	2.981E+01	7.450E+00
Cl-35(p,x)He-3	800.0	5.586E+01	5.044E+00
Cl-35(p,x)He-3	1200.0	6.440E+01	3.613E+00
Cl-35(p,x)He-4	62.0	3.061E+02	5.329E+01

Cl-35(p,x)He-4	90.0	3.336E+02	4.211E+01
Cl-35(p,x)He-4	150.0	2.680E+02	5.544E+01
Cl-35(p,x)He-4	800.0	3.956E+02	4.128E+01
Cl-35(p,x)He-4	1200.0	4.474E+02	4.361E+01
Cl-37(p,x)H-1	62.0	7.410E+02	4.190E+01
Cl-37(p,x)H-1	90.0	8.309E+02	2.677E+01
Cl-37(p,x)H-1	1200.0	1.653E+03	1.637E+02
Cl-37(p,x)H-2	62.0	1.046E+02	1.569E+01
Cl-37(p,x)H-2	90.0	1.145E+02	1.717E+01
Cl-37(p,x)H-2	1200.0	2.866E+02	3.495E+01
Cl-37(p,x)H-3	62.0	2.760E+01	3.736E+00
Cl-37(p,x)H-3	90.0	2.386E+01	3.774E+00
Cl-37(p,x)H-3	150.0	1.894E+01	4.402E+00
Cl-37(p,x)H-3	660.0	5.518E+01	3.293E+00
Cl-37(p,x)H-3	1200.0	8.597E+01	9.634E+00
Cl-37(p,x)He-3	62.0	1.495E+01	3.075E+00
Cl-37(p,x)He-3	90.0	1.391E+01	2.288E+00
Cl-37(p,x)He-3	150.0	1.640E+01	4.433E+00
Cl-37(p,x)He-3	800.0	4.650E+01	5.688E+00
Cl-37(p,x)He-3	1200.0	5.250E+01	5.946E+00
Cl-37(p,x)He-4	62.0	2.742E+02	6.646E+01
Cl-37(p,x)He-4	90.0	2.946E+02	5.278E+01
Cl-37(p,x)He-4	150.0	2.466E+02	4.716E+01
Cl-37(p,x)He-4	800.0	3.722E+02	5.255E+01
Cl-37(p,x)He-4	1200.0	4.162E+02	5.758E+01
Ar-36(p,x)H-1	62.0	1.262E+03	1.574E+01
Ar-36(p,x)H-1	90.0	1.328E+03	3.926E+01
Ar-36(p,x)H-1	1200.0	1.979E+03	1.430E+02
Ar-36(p,x)H-2	62.0	1.134E+02	1.700E+01
Ar-36(p,x)H-2	90.0	1.177E+02	1.766E+01
Ar-36(p,x)H-2	1200.0	2.750E+02	2.556E+01
Ar-36(p,x)H-3	62.0	9.837E+00	6.487E-01
Ar-36(p,x)H-3	90.0	1.235E+01	1.532E+00
Ar-36(p,x)H-3	150.0	1.018E+01	2.311E+00
Ar-36(p,x)H-3	660.0	3.760E+01	3.974E+00
Ar-36(p,x)H-3	1200.0	6.301E+01	1.033E+01
Ar-36(p,x)He-3	62.0	2.201E+01	3.239E+00
Ar-36(p,x)He-3	90.0	2.371E+01	5.362E+00
Ar-36(p,x)He-3	150.0	3.160E+01	1.008E+01
Ar-36(p,x)He-3	800.0	6.373E+01	1.522E+00
Ar-36(p,x)He-3	1200.0	7.100E+01	5.515E-01
Ar-36(p,x)He-4	62.0	2.767E+02	6.277E+01
Ar-36(p,x)He-4	90.0	2.980E+02	4.032E+01
Ar-36(p,x)He-4	150.0	2.459E+02	3.438E+01
Ar-36(p,x)He-4	800.0	3.945E+02	3.810E+01
Ar-36(p,x)He-4	1200.0	4.421E+02	3.723E+01
Ar-38(p,x)H-1	62.0	8.904E+02	3.279E+01
Ar-38(p,x)H-1	90.0	9.896E+02	1.842E+01
Ar-38(p,x)H-1	1200.0	1.827E+03	1.421E+02
Ar-38(p,x)H-2	62.0	1.137E+02	1.705E+01
Ar-38(p,x)H-2	90.0	1.244E+02	1.866E+01
Ar-38(p,x)H-2	1200.0	2.967E+02	2.800E+01
Ar-38(p,x)H-3	62.0	2.060E+01	1.699E+00
Ar-38(p,x)H-3	90.0	2.039E+01	2.141E+00
Ar-38(p,x)H-3	150.0	1.508E+01	3.556E+00
Ar-38(p,x)H-3	660.0	4.935E+01	2.885E+00
Ar-38(p,x)H-3	1200.0	8.023E+01	8.559E+00
Ar-38(p,x)He-3	62.0	1.569E+01	3.114E+00
Ar-38(p,x)He-3	90.0	1.595E+01	3.828E+00
Ar-38(p,x)He-3	150.0	1.960E+01	5.638E+00
Ar-38(p,x)He-3	800.0	5.308E+01	3.918E+00
Ar-38(p,x)He-3	1200.0	5.877E+01	3.833E+00
Ar-38(p,x)He-4	62.0	3.245E+02	4.862E+01
Ar-38(p,x)He-4	90.0	3.465E+02	4.435E+01
Ar-38(p,x)He-4	150.0	2.827E+02	5.036E+01
Ar-38(p,x)He-4	800.0	3.969E+02	4.194E+01
Ar-38(p,x)He-4	1200.0	4.333E+02	4.392E+01
Ar-40(p,x)H-1	62.0	6.874E+02	3.884E+01
Ar-40(p,x)H-1	90.0	7.793E+02	2.256E+01
Ar-40(p,x)H-1	1200.0	1.730E+03	1.281E+02
Ar-40(p,x)H-2	62.0	1.142E+02	1.714E+01
Ar-40(p,x)H-2	90.0	1.239E+02	1.859E+01
Ar-40(p,x)H-2	1200.0	3.138E+02	2.744E+01
Ar-40(p,x)H-3	62.0	2.849E+01	2.241E+00
Ar-40(p,x)H-3	90.0	2.923E+01	5.948E+00
Ar-40(p,x)H-3	150.0	1.852E+01	7.627E+00
Ar-40(p,x)H-3	660.0	6.238E+01	5.152E-01
Ar-40(p,x)H-3	1200.0	9.999E+01	5.755E+00
Ar-40(p,x)He-3	62.0	1.064E+01	1.620E+00
Ar-40(p,x)He-3	90.0	1.137E+01	3.257E+00
Ar-40(p,x)He-3	150.0	1.332E+01	4.312E+00
Ar-40(p,x)He-3	800.0	4.464E+01	3.863E+00
Ar-40(p,x)He-3	1200.0	4.881E+01	4.228E+00
Ar-40(p,x)He-4	62.0	2.574E+02	8.715E+01
Ar-40(p,x)He-4	90.0	2.748E+02	7.045E+01
Ar-40(p,x)He-4	150.0	2.286E+02	4.344E+01
Ar-40(p,x)He-4	800.0	3.710E+02	4.862E+01
Ar-40(p,x)He-4	1200.0	3.990E+02	5.036E+01
K-39(p,x)H-1	62.0	1.169E+03	5.946E+01
K-39(p,x)H-1	90.0	1.242E+03	5.201E+01
K-39(p,x)H-1	1200.0	2.099E+03	1.714E+02
K-39(p,x)H-2	62.0	1.049E+02	1.574E+01
K-39(p,x)H-2	90.0	1.218E+02	1.828E+01
K-39(p,x)H-2	1200.0	3.116E+02	3.274E+01
K-39(p,x)H-3	62.0	1.364E+01	1.706E+00
K-39(p,x)H-3	90.0	1.465E+01	2.754E+00
K-39(p,x)H-3	150.0	1.196E+01	2.515E+00
K-39(p,x)H-3	660.0	4.515E+01	3.351E+00
K-39(p,x)H-3	1200.0	7.622E+01	1.060E+01
K-39(p,x)He-3	62.0	2.146E+01	5.358E+00
K-39(p,x)He-3	90.0	2.044E+01	4.416E+00
K-39(p,x)He-3	150.0	2.460E+01	7.429E+00
K-39(p,x)He-3	800.0	6.328E+01	3.428E+00
K-39(p,x)He-3	1200.0	6.681E+01	3.010E+00
K-39(p,x)He-4	62.0	3.100E+02	6.634E+01
K-39(p,x)He-4	90.0	3.330E+02	4.273E+01
K-39(p,x)He-4	150.0	2.728E+02	3.472E+01
K-39(p,x)He-4	800.0	4.270E+02	4.141E+01
K-39(p,x)He-4	1200.0	4.564E+02	4.275E+01
K-40(p,x)H-1	62.0	1.034E+03	2.584E+01
K-40(p,x)H-1	90.0	1.104E+03	4.181E+01
K-40(p,x)H-1	1200.0	2.023E+03	1.679E+02
K-40(p,x)H-2	62.0	1.262E+02	1.893E+01
K-40(p,x)H-2	90.0	1.318E+02	1.977E+01
K-40(p,x)H-2	1200.0	3.229E+02	3.322E+01
K-40(p,x)H-3	62.0	1.887E+01	5.468E+00
K-40(p,x)H-3	90.0	1.833E+01	4.705E+00
K-40(p,x)H-3	150.0	1.456E+01	3.679E+00
K-40(p,x)H-3	660.0	5.122E+01	2.237E+00
K-40(p,x)H-3	1200.0	8.561E+01	9.910E+00
K-40(p,x)He-3	62.0	1.987E+01	5.645E+00
K-40(p,x)He-3	90.0	1.957E+01	4.672E+00
K-40(p,x)He-3	150.0	2.170E+01	7.549E+00
K-40(p,x)He-3	800.0	5.809E+01	5.451E+00
K-40(p,x)He-3	1200.0	6.084E+01	3.873E+00
K-40(p,x)He-4	62.0	3.170E+02	6.854E+01
K-40(p,x)He-4	90.0	3.405E+02	5.399E+01
K-40(p,x)He-4	150.0	2.784E+02	3.349E+01
K-40(p,x)He-4	800.0	4.252E+02	4.407E+01
K-40(p,x)He-4	1200.0	4.499E+02	4.446E+01
K-41(p,x)H-1	62.0	8.795E+02	5.955E+01
K-41(p,x)H-1	90.0	9.573E+02	3.800E+01
K-41(p,x)H-1	1200.0	1.970E+03	1.372E+02
K-41(p,x)H-2	62.0	1.106E+02	1.658E+01
K-41(p,x)H-2	90.0	1.238E+02	1.857E+01
K-41(p,x)H-2	1200.0	3.353E+02	2.826E+01
K-41(p,x)H-3	62.0	2.492E+01	4.094E+00
K-41(p,x)H-3	90.0	2.343E+01	4.388E+00
K-41(p,x)H-3	150.0	1.638E+01	5.040E+00
K-41(p,x)H-3	660.0	5.786E+01	4.858E-01
K-41(p,x)H-3	1200.0	9.641E+01	6.357E+00
K-41(p,x)He-3	62.0	1.454E+01	2.464E+00
K-41(p,x)He-3	90.0	1.502E+01	2.479E+00
K-41(p,x)He-3	150.0	1.744E+01	5.357E+00
K-41(p,x)He-3	800.0	5.388E+01	3.911E+00
K-41(p,x)He-3	1200.0	5.665E+01	3.401E+00
K-41(p,x)He-4	62.0	2.939E+02	8.234E+01
K-41(p,x)He-4	90.0	3.097E+02	8.065E+01
K-41(p,x)He-4	150.0	2.469E+02	5.820E+01
K-41(p,x)He-4	800.0	4.210E+02	4.540E+01
K-41(p,x)He-4	1200.0	4.402E+02	4.094E+01
Ca-40(p,x)H-1	62.0	1.474E+03	2.070E+01
Ca-40(p,x)H-1	90.0	1.496E+03	3.674E+01
Ca-40(p,x)H-1	1200.0	2.531E+03	2.997E+02
Ca-40(p,x)H-2	62.0	1.085E+02	1.628E+01
Ca-40(p,x)H-2	90.0	1.191E+02	1.786E+01
Ca-40(p,x)H-2	1200.0	3.370E+02	5.298E+01
Ca-40(p,x)H-3	62.0	7.919E+00	5.090E-01
Ca-40(p,x)H-3	90.0	1.128E+01	1.363E+00
Ca-40(p,x)H-3	150.0	9.344E+00	1.600E+00

Ca-40(p,x)H-3	660.0	4.240E+01	5.889E+00
Ca-40(p,x)H-3	1200.0	7.508E+01	1.716E+01
Ca-40(p,x)He-3	62.0	1.908E+01	1.832E+00
Ca-40(p,x)He-3	90.0	2.215E+01	4.854E+00
Ca-40(p,x)He-3	150.0	2.889E+01	1.007E+01
Ca-40(p,x)He-3	800.0	7.544E+01	6.465E+00
Ca-40(p,x)He-3	1200.0	7.724E+01	5.346E+00
Ca-40(p,x)He-4	62.0	2.659E+02	5.646E+01
Ca-40(p,x)He-4	90.0	3.022E+02	4.093E+01
Ca-40(p,x)He-4	150.0	2.617E+02	3.109E+01
Ca-40(p,x)He-4	800.0	4.619E+02	5.476E+01
Ca-40(p,x)He-4	1200.0	4.894E+02	6.168E+01
Ca-42(p,x)H-1	62.0	1.063E+03	4.011E+01
Ca-42(p,x)H-1	90.0	1.131E+03	3.270E+01
Ca-42(p,x)H-1	1200.0	2.360E+03	2.341E+02
Ca-42(p,x)H-2	62.0	1.249E+02	1.873E+01
Ca-42(p,x)H-2	90.0	1.342E+02	2.013E+01
Ca-42(p,x)H-2	1200.0	3.687E+02	4.469E+01
Ca-42(p,x)H-3	62.0	1.865E+01	1.450E+00
Ca-42(p,x)H-3	90.0	2.056E+01	3.379E+00
Ca-42(p,x)H-3	150.0	1.420E+01	3.790E+00
Ca-42(p,x)H-3	660.0	5.527E+01	3.021E+00
Ca-42(p,x)H-3	1200.0	9.604E+01	1.180E+01
Ca-42(p,x)He-3	62.0	1.396E+01	2.008E+00
Ca-42(p,x)He-3	90.0	1.649E+01	3.538E+00
Ca-42(p,x)He-3	150.0	2.095E+01	5.516E+00
Ca-42(p,x)He-3	800.0	6.501E+01	5.892E+00
Ca-42(p,x)He-3	1200.0	6.552E+01	5.992E+00
Ca-42(p,x)He-4	62.0	2.839E+02	8.629E+01
Ca-42(p,x)He-4	90.0	3.290E+02	6.624E+01
Ca-42(p,x)He-4	150.0	2.716E+02	4.739E+01
Ca-42(p,x)He-4	800.0	4.848E+02	4.615E+01
Ca-42(p,x)He-4	1200.0	4.916E+02	4.913E+01
Ca-43(p,x)H-1	62.0	9.124E+02	5.888E+01
Ca-43(p,x)H-1	90.0	9.947E+02	4.035E+01
Ca-43(p,x)H-1	1200.0	2.288E+03	2.033E+02
Ca-43(p,x)H-2	62.0	1.216E+02	1.824E+01
Ca-43(p,x)H-2	90.0	1.352E+02	2.027E+01
Ca-43(p,x)H-2	1200.0	3.817E+02	4.033E+01
Ca-43(p,x)H-3	62.0	2.077E+01	4.621E+00
Ca-43(p,x)H-3	90.0	2.250E+01	7.980E+00
Ca-43(p,x)H-3	150.0	1.560E+01	5.721E+00
Ca-43(p,x)H-3	660.0	6.219E+01	4.766E-01
Ca-43(p,x)H-3	1200.0	1.076E+02	8.770E+00
Ca-43(p,x)He-3	62.0	1.341E+01	1.846E+00
Ca-43(p,x)He-3	90.0	1.502E+01	3.462E+00
Ca-43(p,x)He-3	150.0	1.882E+01	4.768E+00
Ca-43(p,x)He-3	800.0	6.029E+01	6.289E+00
Ca-43(p,x)He-3	1200.0	6.003E+01	5.898E+00
Ca-43(p,x)He-4	62.0	2.732E+02	1.183E+02
Ca-43(p,x)He-4	90.0	3.062E+02	9.300E+01
Ca-43(p,x)He-4	150.0	2.573E+02	6.302E+01
Ca-43(p,x)He-4	800.0	4.803E+02	4.850E+01
Ca-43(p,x)He-4	1200.0	4.813E+02	4.932E+01
Ca-44(p,x)H-1	62.0	8.014E+02	6.685E+01
Ca-44(p,x)H-1	90.0	8.683E+02	3.566E+01
Ca-44(p,x)H-1	1200.0	2.235E+03	1.722E+02
Ca-44(p,x)H-2	62.0	9.982E+01	1.497E+01
Ca-44(p,x)H-2	90.0	1.168E+02	1.751E+01
Ca-44(p,x)H-2	1200.0	3.944E+02	3.674E+01
Ca-44(p,x)H-3	62.0	2.145E+01	1.656E+00
Ca-44(p,x)H-3	90.0	2.356E+01	4.386E+00
Ca-44(p,x)H-3	150.0	1.586E+01	5.682E+00
Ca-44(p,x)H-3	660.0	6.882E+01	2.744E+00
Ca-44(p,x)H-3	1200.0	1.189E+02	4.898E+00
Ca-44(p,x)He-3	62.0	9.106E+00	9.425E-01
Ca-44(p,x)He-3	90.0	1.091E+01	1.992E+00
Ca-44(p,x)He-3	150.0	1.474E+01	2.967E+00
Ca-44(p,x)He-3	800.0	5.542E+01	5.240E+00
Ca-44(p,x)He-3	1200.0	5.512E+01	5.216E+00
Ca-44(p,x)He-4	62.0	2.254E+02	9.656E+01
Ca-44(p,x)He-4	90.0	2.574E+02	8.070E+01
Ca-44(p,x)He-4	150.0	2.318E+02	5.589E+01
Ca-44(p,x)He-4	800.0	4.655E+02	4.996E+01
Ca-44(p,x)He-4	1200.0	4.646E+02	4.448E+01
Ca-46(p,x)H-1	62.0	6.831E+02	5.787E+01
Ca-46(p,x)H-1	90.0	7.337E+02	1.802E+01
Ca-46(p,x)H-1	1200.0	2.154E+03	1.189E+02
Ca-46(p,x)H-2	62.0	8.840E+01	1.326E+01
Ca-46(p,x)H-2	90.0	1.029E+02	1.544E+01
Ca-46(p,x)H-2	1200.0	4.089E+02	2.896E+01
Ca-46(p,x)H-3	62.0	2.374E+01	2.337E+00
Ca-46(p,x)H-3	90.0	2.480E+01	1.625E+00
Ca-46(p,x)H-3	150.0	1.646E+01	4.234E+00
Ca-46(p,x)H-3	660.0	7.928E+01	6.148E+00
Ca-46(p,x)H-3	1200.0	1.411E+02	6.199E-01
Ca-46(p,x)He-3	62.0	6.425E+00	5.440E-01
Ca-46(p,x)He-3	90.0	7.673E+00	1.307E+00
Ca-46(p,x)He-3	150.0	9.841E+00	1.561E+00
Ca-46(p,x)He-3	800.0	4.814E+01	3.235E+00
Ca-46(p,x)He-3	1200.0	4.656E+01	3.989E+00
Ca-46(p,x)He-4	62.0	1.291E+02	4.695E+01
Ca-46(p,x)He-4	90.0	1.555E+02	4.536E+01
Ca-46(p,x)He-4	150.0	1.702E+02	3.827E+01
Ca-46(p,x)He-4	800.0	4.170E+02	5.383E+01
Ca-46(p,x)He-4	1200.0	4.110E+02	4.462E+01
Ca-48(p,x)H-1	62.0	6.133E+02	5.479E+01
Ca-48(p,x)H-1	90.0	6.606E+02	1.140E+01
Ca-48(p,x)H-1	1200.0	2.074E+03	1.060E+02
Ca-48(p,x)H-2	62.0	7.888E+01	1.183E+01
Ca-48(p,x)H-2	90.0	9.082E+01	1.362E+01
Ca-48(p,x)H-2	1200.0	4.201E+02	2.705E+01
Ca-48(p,x)H-3	62.0	2.309E+01	1.676E+00
Ca-48(p,x)H-3	90.0	2.435E+01	1.265E+00
Ca-48(p,x)H-3	150.0	1.564E+01	2.855E+00
Ca-48(p,x)H-3	660.0	8.608E+01	7.783E+00
Ca-48(p,x)H-3	1200.0	1.616E+02	7.764E+00
Ca-48(p,x)He-3	62.0	4.256E+00	4.985E-01
Ca-48(p,x)He-3	90.0	5.527E+00	1.064E+00
Ca-48(p,x)He-3	150.0	6.749E+00	8.243E-01
Ca-48(p,x)He-3	800.0	4.195E+01	2.359E+00
Ca-48(p,x)He-3	1200.0	4.214E+01	2.890E+00
Ca-48(p,x)He-4	62.0	7.770E+01	1.470E+01
Ca-48(p,x)He-4	90.0	8.685E+01	2.062E+01
Ca-48(p,x)He-4	150.0	1.120E+02	1.706E+01
Ca-48(p,x)He-4	800.0	3.612E+02	5.588E+01
Ca-48(p,x)He-4	1200.0	3.716E+02	4.542E+01
Sc-45(p,x)H-1	62.0	1.049E+03	9.093E+01
Sc-45(p,x)H-1	90.0	1.080E+03	5.602E+01
Sc-45(p,x)H-1	1200.0	2.355E+03	3.744E+01
Sc-45(p,x)H-2	62.0	9.925E+01	1.489E+01
Sc-45(p,x)H-2	90.0	1.173E+02	1.760E+01
Sc-45(p,x)H-2	1200.0	3.932E+02	5.499E+00
Sc-45(p,x)H-3	62.0	1.749E+01	2.064E+00
Sc-45(p,x)H-3	90.0	1.902E+01	3.484E+00
Sc-45(p,x)H-3	150.0	1.425E+01	4.482E+00
Sc-45(p,x)H-3	660.0	6.027E+01	6.492E+00
Sc-45(p,x)H-3	1200.0	1.087E+02	9.723E-01
Sc-45(p,x)He-3	62.0	1.351E+01	2.651E+00
Sc-45(p,x)He-3	90.0	1.448E+01	1.571E+00
Sc-45(p,x)He-3	150.0	1.829E+01	3.565E+00
Sc-45(p,x)He-3	800.0	6.115E+01	4.649E-01
Sc-45(p,x)He-3	1200.0	5.825E+01	1.532E+00
Sc-45(p,x)He-4	62.0	2.513E+02	1.220E+02
Sc-45(p,x)He-4	90.0	2.615E+02	1.131E+02
Sc-45(p,x)He-4	150.0	2.365E+02	8.289E+01
Sc-45(p,x)He-4	800.0	4.804E+02	4.891E+01
Sc-45(p,x)He-4	1200.0	4.668E+02	1.015E+01
Ti-46(p,x)H-1	62.0	1.254E+03	8.902E+01
Ti-46(p,x)H-1	90.0	1.275E+03	5.793E+01
Ti-46(p,x)H-1	1200.0	2.638E+03	3.956E+02
Ti-46(p,x)H-2	62.0	9.920E+01	1.488E+01
Ti-46(p,x)H-2	90.0	1.185E+02	1.777E+01
Ti-46(p,x)H-2	1200.0	4.077E+02	6.116E+01
Ti-46(p,x)H-3	62.0	1.261E+01	6.736E-01
Ti-46(p,x)H-3	90.0	1.572E+01	7.024E-01
Ti-46(p,x)H-3	150.0	1.153E+01	2.490E+00
Ti-46(p,x)H-3	660.0	5.433E+01	6.191E+00
Ti-46(p,x)H-3	1200.0	1.015E+02	1.523E+01
Ti-46(p,x)He-3	62.0	1.189E+01	7.254E-01
Ti-46(p,x)He-3	90.0	1.447E+01	1.949E+00
Ti-46(p,x)He-3	150.0	1.979E+01	4.144E+00
Ti-46(p,x)He-3	800.0	7.015E+01	2.550E+00
Ti-46(p,x)He-3	1200.0	6.340E+01	9.510E+00
Ti-46(p,x)He-4	62.0	2.174E+02	1.052E+02
Ti-46(p,x)He-4	90.0	2.518E+02	1.056E+02
Ti-46(p,x)He-4	150.0	2.319E+02	8.564E+01
Ti-46(p,x)He-4	800.0	5.096E+02	5.763E+01
Ti-46(p,x)He-4	1200.0	4.836E+02	7.255E+01
Ti-47(p,x)H-1	62.0	1.096E+03	5.976E+01

Ti-47(p,x)H-1	90.0	1.135E+03	3.132E+01
Ti-47(p,x)H-1	1200.0	2.539E+03	3.809E+02
Ti-47(p,x)H-2	62.0	1.032E+02	1.548E+01
Ti-47(p,x)H-2	90.0	1.214E+02	1.821E+01
Ti-47(p,x)H-2	1200.0	4.207E+02	6.310E+01
Ti-47(p,x)H-3	62.0	1.444E+01	3.037E+00
Ti-47(p,x)H-3	90.0	1.659E+01	3.116E+00
Ti-47(p,x)H-3	150.0	1.251E+01	3.030E+00
Ti-47(p,x)H-3	660.0	5.933E+01	7.070E+00
Ti-47(p,x)H-3	1200.0	1.136E+02	1.704E+01
Ti-47(p,x)He-3	62.0	1.168E+01	7.396E-01
Ti-47(p,x)He-3	90.0	1.357E+01	1.656E+00
Ti-47(p,x)He-3	150.0	1.765E+01	3.457E+00
Ti-47(p,x)He-3	800.0	6.392E+01	4.051E-01
Ti-47(p,x)He-3	1200.0	6.040E+01	9.059E+00
Ti-47(p,x)He-4	62.0	1.836E+02	8.032E+01
Ti-47(p,x)He-4	90.0	2.145E+02	7.788E+01
Ti-47(p,x)He-4	150.0	2.125E+02	7.240E+01
Ti-47(p,x)He-4	800.0	4.983E+02	4.953E+01
Ti-47(p,x)He-4	1200.0	4.787E+02	7.181E+01
Ti-48(p,x)H-1	62.0	9.651E+02	6.033E+01
Ti-48(p,x)H-1	90.0	9.987E+02	1.682E+01
Ti-48(p,x)H-1	1200.0	2.454E+03	3.681E+02
Ti-48(p,x)H-2	62.0	9.129E+01	1.369E+01
Ti-48(p,x)H-2	90.0	1.097E+02	1.645E+01
Ti-48(p,x)H-2	1200.0	4.294E+02	6.440E+01
Ti-48(p,x)H-3	62.0	1.651E+01	2.207E+00
Ti-48(p,x)H-3	90.0	1.837E+01	9.815E-02
Ti-48(p,x)H-3	150.0	1.291E+01	2.066E+00
Ti-48(p,x)H-3	660.0	6.491E+01	1.074E+01
Ti-48(p,x)H-3	1200.0	1.245E+02	1.868E+01
Ti-48(p,x)He-3	62.0	8.448E+00	2.682E-01
Ti-48(p,x)He-3	90.0	1.056E+01	1.044E+00
Ti-48(p,x)He-3	150.0	1.382E+01	1.691E+00
Ti-48(p,x)He-3	800.0	5.920E+01	8.784E-01
Ti-48(p,x)He-3	1200.0	5.689E+01	8.534E+00
Ti-48(p,x)He-4	62.0	1.663E+02	3.884E+01
Ti-48(p,x)He-4	90.0	1.843E+02	4.154E+01
Ti-48(p,x)He-4	150.0	1.843E+02	4.100E+01
Ti-48(p,x)He-4	800.0	4.766E+02	4.026E+01
Ti-48(p,x)He-4	1200.0	4.673E+02	7.010E+01
Ti-49(p,x)H-1	62.0	8.894E+02	5.803E+01
Ti-49(p,x)H-1	90.0	9.263E+02	2.399E+01
Ti-49(p,x)H-1	1200.0	2.370E+03	3.555E+02
Ti-49(p,x)H-2	62.0	9.647E+01	1.447E+01
Ti-49(p,x)H-2	90.0	1.119E+02	1.678E+01
Ti-49(p,x)H-2	1200.0	4.357E+02	6.535E+01
Ti-49(p,x)H-3	62.0	1.686E+01	3.009E+00
Ti-49(p,x)H-3	90.0	1.925E+01	2.530E+00
Ti-49(p,x)H-3	150.0	1.410E+01	2.219E+00
Ti-49(p,x)H-3	660.0	6.778E+01	9.844E+00
Ti-49(p,x)H-3	1200.0	1.350E+02	2.026E+01
Ti-49(p,x)He-3	62.0	8.429E+00	7.996E-01
Ti-49(p,x)He-3	90.0	1.037E+01	1.058E+00
Ti-49(p,x)He-3	150.0	1.291E+01	1.323E+00
Ti-49(p,x)He-3	800.0	5.409E+01	1.621E-01
Ti-49(p,x)He-3	1200.0	5.327E+01	7.990E+00
Ti-49(p,x)He-4	62.0	1.347E+02	3.581E+01
Ti-49(p,x)He-4	90.0	1.634E+02	3.233E+01
Ti-49(p,x)He-4	150.0	1.651E+02	2.929E+01
Ti-49(p,x)He-4	800.0	4.513E+02	3.794E+01
Ti-49(p,x)He-4	1200.0	4.481E+02	6.721E+01
Ti-50(p,x)H-1	62.0	7.983E+02	5.266E+01
Ti-50(p,x)H-1	90.0	8.372E+02	1.714E+01
Ti-50(p,x)H-1	1200.0	2.304E+03	3.455E+02
Ti-50(p,x)H-2	62.0	8.585E+01	1.288E+01
Ti-50(p,x)H-2	90.0	1.020E+02	1.531E+01
Ti-50(p,x)H-2	1200.0	4.399E+02	6.598E+01
Ti-50(p,x)H-3	62.0	1.670E+01	4.350E-01
Ti-50(p,x)H-3	90.0	2.045E+01	2.212E-01
Ti-50(p,x)H-3	150.0	1.326E+01	1.949E+00
Ti-50(p,x)H-3	660.0	6.984E+01	9.968E+00
Ti-50(p,x)H-3	1200.0	1.439E+02	2.158E+01
Ti-50(p,x)He-3	62.0	6.293E+00	3.649E-01
Ti-50(p,x)He-3	90.0	8.205E+00	1.016E+00
Ti-50(p,x)He-3	150.0	1.064E+01	1.023E+00
Ti-50(p,x)He-3	800.0	4.961E+01	8.984E-01
Ti-50(p,x)He-3	1200.0	5.006E+01	7.510E+00
Ti-50(p,x)He-4	62.0	1.163E+02	1.783E+01
Ti-50(p,x)He-4	90.0	1.291E+02	1.946E+01
Ti-50(p,x)He-4	150.0	1.421E+02	1.631E+01
Ti-50(p,x)He-4	800.0	4.218E+02	3.703E+01
Ti-50(p,x)He-4	1200.0	4.268E+02	6.402E+01
V-50(p,x)H-1	62.0	1.096E+03	3.550E+01
V-50(p,x)H-1	90.0	1.097E+03	1.352E+01
V-50(p,x)H-1	1200.0	2.604E+03	4.311E+01
V-50(p,x)H-2	62.0	9.899E+01	1.485E+01
V-50(p,x)H-2	90.0	1.169E+02	1.754E+01
V-50(p,x)H-2	1200.0	4.428E+02	1.190E+01
V-50(p,x)H-3	62.0	1.432E+01	3.296E+00
V-50(p,x)H-3	90.0	1.658E+01	2.380E+00
V-50(p,x)H-3	150.0	1.247E+01	1.717E+00
V-50(p,x)H-3	660.0	6.061E+01	6.975E+00
V-50(p,x)H-3	1200.0	1.253E+02	4.322E+00
V-50(p,x)He-3	62.0	1.117E+01	3.380E+00
V-50(p,x)He-3	90.0	1.327E+01	1.927E+00
V-50(p,x)He-3	150.0	1.651E+01	8.521E-01
V-50(p,x)He-3	800.0	5.991E+01	8.317E-01
V-50(p,x)He-3	1200.0	5.980E+01	8.235E-02
V-50(p,x)He-4	62.0	1.590E+02	1.369E+01
V-50(p,x)He-4	90.0	1.996E+02	2.058E+01
V-50(p,x)He-4	150.0	1.901E+02	2.205E+01
V-50(p,x)He-4	800.0	4.859E+02	3.205E+01
V-50(p,x)He-4	1200.0	4.819E+02	1.888E+01
V-51(p,x)H-1	62.0	9.803E+02	5.162E+01
V-51(p,x)H-1	90.0	9.936E+02	1.566E+01
V-51(p,x)H-1	1200.0	2.452E+03	1.219E+01
V-51(p,x)H-2	62.0	8.766E+01	1.315E+01
V-51(p,x)H-2	90.0	1.059E+02	1.589E+01
V-51(p,x)H-2	1200.0	4.373E+02	6.559E+01
V-51(p,x)H-3	62.0	1.531E+01	1.327E+00
V-51(p,x)H-3	90.0	1.849E+01	8.499E-02
V-51(p,x)H-3	150.0	1.229E+01	1.539E+00
V-51(p,x)H-3	660.0	6.371E+01	7.533E+00
V-51(p,x)H-3	1200.0	1.312E+02	1.882E+00
V-51(p,x)He-3	62.0	8.615E+00	1.722E+00
V-51(p,x)He-3	90.0	1.056E+01	9.741E-01
V-51(p,x)He-3	150.0	1.356E+01	4.335E-01
V-51(p,x)He-3	800.0	5.563E+01	2.154E-01
V-51(p,x)He-3	1200.0	5.967E+01	4.127E-01
V-51(p,x)He-4	62.0	1.338E+02	3.983E+01
V-51(p,x)He-4	90.0	1.549E+02	1.331E+01
V-51(p,x)He-4	150.0	1.598E+02	1.108E+01
V-51(p,x)He-4	800.0	4.633E+02	2.923E+01
V-51(p,x)He-4	1200.0	4.899E+02	3.270E+00
Cr-50(p,x)H-1	62.0	1.495E+03	4.957E+01
Cr-50(p,x)H-1	90.0	1.452E+03	1.455E+01
Cr-50(p,x)H-1	1200.0	2.998E+03	7.236E+01
Cr-50(p,x)H-2	62.0	9.647E+01	1.447E+01
Cr-50(p,x)H-2	90.0	1.167E+02	1.751E+01
Cr-50(p,x)H-2	1200.0	4.381E+02	1.913E+01
Cr-50(p,x)H-3	62.0	9.714E+00	3.235E-01
Cr-50(p,x)H-3	90.0	1.368E+01	7.913E-01
Cr-50(p,x)H-3	150.0	9.839E+00	6.369E-01
Cr-50(p,x)H-3	660.0	5.033E+01	3.184E+00
Cr-50(p,x)H-3	1200.0	1.071E+02	7.196E+00
Cr-50(p,x)He-3	62.0	1.111E+01	3.177E-01
Cr-50(p,x)He-3	90.0	1.443E+01	5.978E-01
Cr-50(p,x)He-3	150.0	2.041E+01	1.062E+00
Cr-50(p,x)He-3	800.0	7.346E+01	3.650E+00
Cr-50(p,x)He-3	1200.0	7.176E+01	3.191E+00
Cr-50(p,x)He-4	62.0	1.653E+02	1.273E+01
Cr-50(p,x)He-4	90.0	1.952E+02	1.381E+01
Cr-50(p,x)He-4	150.0	1.948E+02	2.156E+01
Cr-50(p,x)He-4	800.0	5.294E+02	4.388E+01
Cr-50(p,x)He-4	1200.0	5.187E+02	3.891E+01
Cr-52(p,x)H-1	62.0	1.130E+03	3.894E+01
Cr-52(p,x)H-1	90.0	1.139E+03	1.517E+01
Cr-52(p,x)H-1	1200.0	2.618E+03	1.623E+01
Cr-52(p,x)H-2	62.0	9.090E+01	1.364E+01
Cr-52(p,x)H-2	90.0	1.119E+02	1.678E+01
Cr-52(p,x)H-2	1200.0	4.307E+02	1.451E+00
Cr-52(p,x)H-3	62.0	1.243E+01	7.422E-01
Cr-52(p,x)H-3	90.0	1.673E+01	3.825E-01
Cr-52(p,x)H-3	150.0	1.095E+01	1.170E+00
Cr-52(p,x)H-3	660.0	5.724E+01	5.003E+00
Cr-52(p,x)H-3	1200.0	1.187E+02	1.502E+00
Cr-52(p,x)He-3	62.0	8.081E+00	7.023E-02
Cr-52(p,x)He-3	90.0	1.086E+01	6.916E-01
Cr-52(p,x)He-3	150.0	1.460E+01	1.095E+00

Cr-52(p,x)He-3	800.0	6.124E+01	4.379E-01
Cr-52(p,x)He-3	1200.0	6.946E+01	3.624E-01
Cr-52(p,x)He-4	62.0	1.379E+02	1.665E+01
Cr-52(p,x)He-4	90.0	1.514E+02	2.117E+01
Cr-52(p,x)He-4	150.0	1.636E+02	7.627E+00
Cr-52(p,x)He-4	800.0	4.939E+02	1.868E+01
Cr-52(p,x)He-4	1200.0	5.453E+02	5.526E+00
Cr-53(p,x)H-1	62.0	1.000E+03	2.792E+01
Cr-53(p,x)H-1	90.0	1.022E+03	1.908E+01
Cr-53(p,x)H-1	1200.0	2.455E+03	2.512E+01
Cr-53(p,x)H-2	62.0	1.001E+02	1.501E+01
Cr-53(p,x)H-2	90.0	1.196E+02	1.794E+01
Cr-53(p,x)H-2	1200.0	4.252E+02	1.078E+01
Cr-53(p,x)H-3	62.0	1.378E+01	2.253E+00
Cr-53(p,x)H-3	90.0	1.828E+01	1.957E+00
Cr-53(p,x)H-3	150.0	1.196E+01	1.531E+00
Cr-53(p,x)H-3	660.0	6.019E+01	5.743E+00
Cr-53(p,x)H-3	1200.0	1.217E+02	5.716E+00
Cr-53(p,x)He-3	62.0	8.513E+00	8.599E-01
Cr-53(p,x)He-3	90.0	1.131E+01	1.089E+00
Cr-53(p,x)He-3	150.0	1.437E+01	1.292E+00
Cr-53(p,x)He-3	800.0	5.694E+01	1.339E+00
Cr-53(p,x)He-3	1200.0	6.885E+01	1.487E+00
Cr-53(p,x)He-4	62.0	1.352E+02	2.164E+01
Cr-53(p,x)He-4	90.0	1.488E+02	2.048E+01
Cr-53(p,x)He-4	150.0	1.510E+02	1.237E+01
Cr-53(p,x)He-4	800.0	4.730E+02	2.365E+01
Cr-53(p,x)He-4	1200.0	5.517E+02	1.350E+01
Cr-54(p,x)H-1	62.0	8.895E+02	5.949E+01
Cr-54(p,x)H-1	90.0	9.110E+02	6.873E+00
Cr-54(p,x)H-1	1200.0	2.313E+03	5.014E+01
Cr-54(p,x)H-2	62.0	9.395E+01	1.409E+01
Cr-54(p,x)H-2	90.0	1.145E+02	1.718E+01
Cr-54(p,x)H-2	1200.0	4.195E+02	2.525E+01
Cr-54(p,x)H-3	62.0	1.531E+01	9.926E-01
Cr-54(p,x)H-3	90.0	2.134E+01	1.010E+00
Cr-54(p,x)H-3	150.0	1.264E+01	2.084E+00
Cr-54(p,x)H-3	660.0	6.310E+01	5.484E+00
Cr-54(p,x)H-3	1200.0	1.245E+02	1.180E+01
Cr-54(p,x)He-3	62.0	6.422E+00	2.241E-01
Cr-54(p,x)He-3	90.0	9.114E+00	1.074E+00
Cr-54(p,x)He-3	150.0	1.209E+01	1.265E+00
Cr-54(p,x)He-3	800.0	5.268E+01	1.531E+00
Cr-54(p,x)He-3	1200.0	6.735E+01	2.557E+00
Cr-54(p,x)He-4	62.0	1.319E+02	1.575E+01
Cr-54(p,x)He-4	90.0	1.467E+02	2.033E+01
Cr-54(p,x)He-4	150.0	1.469E+02	1.200E+01
Cr-54(p,x)He-4	800.0	4.494E+02	3.198E+01
Cr-54(p,x)He-4	1200.0	5.554E+02	3.576E+01
Mn-55(p,x)H-1	62.0	1.009E+03	3.228E+01
Mn-55(p,x)H-1	90.0	1.069E+03	2.117E+01
Mn-55(p,x)H-1	1200.0	2.523E+03	2.718E+01
Mn-55(p,x)H-2	62.0	9.394E+01	1.409E+01
Mn-55(p,x)H-2	90.0	1.162E+02	1.742E+01
Mn-55(p,x)H-2	1200.0	4.252E+02	1.333E+01
Mn-55(p,x)H-3	62.0	1.501E+01	1.247E+00
Mn-55(p,x)H-3	90.0	1.874E+01	7.308E-01
Mn-55(p,x)H-3	150.0	1.199E+01	6.701E-01
Mn-55(p,x)H-3	660.0	5.847E+01	3.004E+00
Mn-55(p,x)H-3	1200.0	1.177E+02	6.095E+00
Mn-55(p,x)He-3	62.0	8.932E+00	1.675E+00
Mn-55(p,x)He-3	90.0	1.159E+01	1.197E+00
Mn-55(p,x)He-3	150.0	1.490E+01	4.178E-01
Mn-55(p,x)He-3	800.0	5.820E+01	1.153E+00
Mn-55(p,x)He-3	1200.0	7.568E+01	7.615E-01
Mn-55(p,x)He-4	62.0	1.582E+02	2.668E+01
Mn-55(p,x)He-4	90.0	1.708E+02	9.798E+00
Mn-55(p,x)He-4	150.0	1.624E+02	4.477E+00
Mn-55(p,x)He-4	800.0	4.875E+02	1.908E+01
Mn-55(p,x)He-4	1200.0	6.000E+02	1.563E+01
Fe-54(p,x)H-1	62.0	1.684E+03	2.526E+02
Fe-54(p,x)H-1	90.0	1.582E+03	3.989E+01
Fe-54(p,x)H-1	1200.0	3.001E+03	4.501E+02
Fe-54(p,x)H-2	62.0	8.731E+01	1.310E+01
Fe-54(p,x)H-2	90.0	1.063E+02	1.595E+01
Fe-54(p,x)H-2	1200.0	4.095E+02	6.143E+01
Fe-54(p,x)H-3	62.0	7.330E+00	1.099E+00
Fe-54(p,x)H-3	90.0	1.186E+01	2.291E+00
Fe-54(p,x)H-3	150.0	8.491E+00	1.274E+00
Fe-54(p,x)H-3	660.0	4.510E+01	6.765E+00
Fe-54(p,x)H-3	1200.0	9.342E+01	1.401E+01
Fe-54(p,x)He-3	62.0	1.023E+01	1.535E+00
Fe-54(p,x)He-3	90.0	1.467E+01	2.200E+00
Fe-54(p,x)He-3	150.0	2.123E+01	3.185E+00
Fe-54(p,x)He-3	800.0	7.387E+01	1.108E+01
Fe-54(p,x)He-3	1200.0	9.372E+01	1.406E+01
Fe-54(p,x)He-4	62.0	1.658E+02	2.487E+01
Fe-54(p,x)He-4	90.0	1.794E+02	2.692E+01
Fe-54(p,x)He-4	150.0	1.749E+02	2.623E+01
Fe-54(p,x)He-4	800.0	5.383E+02	8.074E+01
Fe-54(p,x)He-4	1200.0	6.514E+02	9.771E+01
Fe-56(p,x)H-1	62.0	1.130E+03	1.695E+02
Fe-56(p,x)H-1	90.0	1.261E+03	2.182E+01
Fe-56(p,x)H-1	1200.0	2.769E+03	4.154E+02
Fe-56(p,x)H-2	62.0	8.937E+01	1.341E+01
Fe-56(p,x)H-2	90.0	1.117E+02	1.675E+01
Fe-56(p,x)H-2	1200.0	4.266E+02	6.399E+01
Fe-56(p,x)H-3	62.0	1.340E+01	2.010E+00
Fe-56(p,x)H-3	90.0	1.703E+01	5.503E-01
Fe-56(p,x)H-3	150.0	1.060E+01	1.591E+00
Fe-56(p,x)H-3	660.0	5.376E+01	8.064E+00
Fe-56(p,x)H-3	1200.0	1.103E+02	1.655E+01
Fe-56(p,x)He-3	62.0	8.988E+00	1.348E+00
Fe-56(p,x)He-3	90.0	1.184E+01	1.776E+00
Fe-56(p,x)He-3	150.0	1.603E+01	2.405E+00
Fe-56(p,x)He-3	800.0	6.475E+01	9.712E+00
Fe-56(p,x)He-3	1200.0	8.261E+01	1.239E+01
Fe-56(p,x)He-4	62.0	1.674E+02	2.511E+01
Fe-56(p,x)He-4	90.0	1.742E+02	2.613E+01
Fe-56(p,x)He-4	150.0	1.693E+02	2.539E+01
Fe-56(p,x)He-4	800.0	5.213E+02	7.820E+01
Fe-56(p,x)He-4	1200.0	6.358E+02	9.536E+01
Fe-57(p,x)H-1	62.0	9.973E+02	2.199E+01
Fe-57(p,x)H-1	90.0	1.144E+03	4.698E+00
Fe-57(p,x)H-1	1200.0	2.672E+03	4.009E+02
Fe-57(p,x)H-2	62.0	1.085E+02	1.627E+01
Fe-57(p,x)H-2	90.0	1.293E+02	1.939E+01
Fe-57(p,x)H-2	1200.0	4.364E+02	6.547E+01
Fe-57(p,x)H-3	62.0	1.635E+01	2.248E+00
Fe-57(p,x)H-3	90.0	1.923E+01	3.363E+00
Fe-57(p,x)H-3	150.0	1.229E+01	1.843E+00
Fe-57(p,x)H-3	660.0	5.886E+01	8.828E+00
Fe-57(p,x)H-3	1200.0	1.192E+02	1.788E+01
Fe-57(p,x)He-3	62.0	9.386E+00	1.408E+00
Fe-57(p,x)He-3	90.0	1.188E+01	1.783E+00
Fe-57(p,x)He-3	150.0	1.485E+01	2.228E+00
Fe-57(p,x)He-3	800.0	6.073E+01	9.109E+00
Fe-57(p,x)He-3	1200.0	7.960E+01	1.194E+01
Fe-57(p,x)He-4	62.0	1.579E+02	2.368E+01
Fe-57(p,x)He-4	90.0	1.699E+02	2.549E+01
Fe-57(p,x)He-4	150.0	1.668E+02	2.502E+01
Fe-57(p,x)He-4	800.0	5.099E+02	7.648E+01
Fe-57(p,x)He-4	1200.0	6.273E+02	9.410E+01
Fe-58(p,x)H-1	62.0	8.583E+02	5.414E+01
Fe-58(p,x)H-1	90.0	1.009E+03	1.403E+01
Fe-58(p,x)H-1	1200.0	2.724E+03	2.396E+01
Fe-58(p,x)H-2	62.0	9.789E+01	1.468E+01
Fe-58(p,x)H-2	90.0	1.209E+02	1.813E+01
Fe-58(p,x)H-2	1200.0	4.485E+02	1.715E+01
Fe-58(p,x)H-3	62.0	1.814E+01	1.980E-01
Fe-58(p,x)H-3	90.0	2.183E+01	2.218E+00
Fe-58(p,x)H-3	150.0	1.299E+01	1.949E+00
Fe-58(p,x)H-3	660.0	6.383E+01	9.574E+00
Fe-58(p,x)H-3	1200.0	1.323E+02	2.220E+00
Fe-58(p,x)He-3	62.0	6.630E+00	2.097E-02
Fe-58(p,x)He-3	90.0	8.988E+00	1.012E-01
Fe-58(p,x)He-3	150.0	1.171E+01	3.212E-01
Fe-58(p,x)He-3	800.0	5.456E+01	1.555E+00
Fe-58(p,x)He-3	1200.0	7.447E+01	2.274E+00
Fe-58(p,x)He-4	62.0	1.464E+02	7.589E+00
Fe-58(p,x)He-4	90.0	1.547E+02	1.659E+01
Fe-58(p,x)He-4	150.0	1.536E+02	1.091E+01
Fe-58(p,x)He-4	800.0	4.864E+02	1.249E+01
Fe-58(p,x)He-4	1200.0	6.166E+02	1.354E+01
Co-59(p,x)H-1	62.0	1.055E+03	6.029E+01
Co-59(p,x)H-1	90.0	1.209E+03	3.288E+01
Co-59(p,x)H-1	1200.0	3.044E+03	1.262E+01
Co-59(p,x)H-2	62.0	9.695E+01	1.454E+01
Co-59(p,x)H-2	90.0	1.243E+02	1.865E+01
Co-59(p,x)H-2	1200.0	4.763E+02	1.229E+01

Co-59(p,x)H-3	62.0	1.650E+01	1.056E+00
Co-59(p,x)H-3	90.0	1.963E+01	1.798E+00
Co-59(p,x)H-3	150.0	1.245E+01	4.899E-01
Co-59(p,x)H-3	660.0	6.220E+01	2.418E+00
Co-59(p,x)H-3	1200.0	1.313E+02	2.248E+00
Co-59(p,x)He-3	62.0	8.683E+00	1.668E+00
Co-59(p,x)He-3	90.0	1.152E+01	1.606E+00
Co-59(p,x)He-3	150.0	1.481E+01	8.846E-01
Co-59(p,x)He-3	800.0	5.986E+01	1.800E+00
Co-59(p,x)He-3	1200.0	8.300E+01	1.980E+00
Co-59(p,x)He-4	62.0	1.842E+02	2.989E+01
Co-59(p,x)He-4	90.0	1.931E+02	1.008E+01
Co-59(p,x)He-4	150.0	1.847E+02	1.791E+00
Co-59(p,x)He-4	800.0	5.207E+02	6.782E+00
Co-59(p,x)He-4	1200.0	6.615E+02	1.106E+01
Ni-58(p,x)H-1	62.0	1.656E+03	2.387E+01
Ni-58(p,x)H-1	90.0	1.798E+03	2.696E+02
Ni-58(p,x)H-1	1200.0	3.522E+03	2.779E+01
Ni-58(p,x)H-2	62.0	9.758E+01	1.464E+01
Ni-58(p,x)H-2	90.0	1.183E+02	1.775E+01
Ni-58(p,x)H-2	1200.0	4.800E+02	1.803E+01
Ni-58(p,x)H-3	62.0	1.053E+01	4.996E-01
Ni-58(p,x)H-3	90.0	1.424E+01	2.136E+00
Ni-58(p,x)H-3	150.0	9.363E+00	1.328E+00
Ni-58(p,x)H-3	660.0	4.965E+01	1.098E+00
Ni-58(p,x)H-3	1200.0	1.078E+02	1.724E+00
Ni-58(p,x)He-3	62.0	1.085E+01	4.067E-02
Ni-58(p,x)He-3	90.0	1.482E+01	1.927E-01
Ni-58(p,x)He-3	150.0	2.113E+01	6.686E-01
Ni-58(p,x)He-3	800.0	7.838E+01	2.510E+00
Ni-58(p,x)He-3	1200.0	1.042E+02	3.264E+00
Ni-58(p,x)He-4	62.0	1.706E+02	1.012E+01
Ni-58(p,x)He-4	90.0	2.034E+02	1.885E+01
Ni-58(p,x)He-4	150.0	1.875E+02	1.205E+01
Ni-58(p,x)He-4	800.0	5.603E+02	1.491E+01
Ni-58(p,x)He-4	1200.0	7.000E+02	1.500E+01
Ni-60(p,x)H-1	62.0	1.222E+03	3.845E+01
Ni-60(p,x)H-1	90.0	1.390E+03	2.543E+01
Ni-60(p,x)H-1	1200.0	3.412E+03	5.118E+02
Ni-60(p,x)H-2	62.0	1.052E+02	1.578E+01
Ni-60(p,x)H-2	90.0	1.339E+02	2.009E+01
Ni-60(p,x)H-2	1200.0	5.058E+02	7.586E+01
Ni-60(p,x)H-3	62.0	1.368E+01	4.809E-01
Ni-60(p,x)H-3	90.0	1.847E+01	1.744E+00
Ni-60(p,x)H-3	150.0	1.130E+01	2.224E-01
Ni-60(p,x)H-3	660.0	5.956E+01	2.471E+00
Ni-60(p,x)H-3	1200.0	1.298E+02	1.947E+01
Ni-60(p,x)He-3	62.0	8.136E+00	1.220E+00
Ni-60(p,x)He-3	90.0	1.145E+01	1.718E+00
Ni-60(p,x)He-3	150.0	1.580E+01	2.371E+00
Ni-60(p,x)He-3	800.0	6.546E+01	9.820E+00
Ni-60(p,x)He-3	1200.0	9.317E+01	1.398E+01
Ni-60(p,x)He-4	62.0	1.855E+02	2.783E+01
Ni-60(p,x)He-4	90.0	1.915E+02	2.872E+01
Ni-60(p,x)He-4	150.0	2.040E+02	3.060E+01
Ni-60(p,x)He-4	800.0	5.528E+02	8.291E+01
Ni-60(p,x)He-4	1200.0	7.070E+02	1.060E+02
Ni-61(p,x)H-1	62.0	1.070E+03	3.856E+01
Ni-61(p,x)H-1	90.0	1.244E+03	2.688E+01
Ni-61(p,x)H-1	1200.0	3.283E+03	4.924E+02
Ni-61(p,x)H-2	62.0	1.161E+02	1.741E+01
Ni-61(p,x)H-2	90.0	1.410E+02	2.115E+01
Ni-61(p,x)H-2	1200.0	5.148E+02	7.722E+01
Ni-61(p,x)H-3	62.0	1.615E+01	2.225E+00
Ni-61(p,x)H-3	90.0	2.023E+01	4.199E+00
Ni-61(p,x)H-3	150.0	1.263E+01	4.654E-01
Ni-61(p,x)H-3	660.0	6.595E+01	4.757E+00
Ni-61(p,x)H-3	1200.0	1.408E+02	2.112E+01
Ni-61(p,x)He-3	62.0	8.579E+00	1.287E+00
Ni-61(p,x)He-3	90.0	1.181E+01	1.771E+00
Ni-61(p,x)He-3	150.0	1.507E+01	2.261E+00
Ni-61(p,x)He-3	800.0	6.145E+01	9.218E+00
Ni-61(p,x)He-3	1200.0	8.835E+01	1.325E+01
Ni-61(p,x)He-4	62.0	1.798E+02	2.697E+01
Ni-61(p,x)He-4	90.0	2.012E+02	3.018E+01
Ni-61(p,x)He-4	150.0	2.104E+02	3.157E+01
Ni-61(p,x)He-4	800.0	5.434E+02	8.150E+01
Ni-61(p,x)He-4	1200.0	6.973E+02	1.046E+02
Ni-62(p,x)H-1	62.0	9.240E+02	5.359E+01
Ni-62(p,x)H-1	90.0	1.095E+03	2.611E+01
Ni-62(p,x)H-1	1200.0	3.165E+03	4.748E+02
Ni-62(p,x)H-2	62.0	1.009E+02	1.514E+01
Ni-62(p,x)H-2	90.0	1.293E+02	1.939E+01
Ni-62(p,x)H-2	1200.0	5.233E+02	7.850E+01
Ni-62(p,x)H-3	62.0	1.675E+01	9.325E-01
Ni-62(p,x)H-3	90.0	2.240E+01	2.377E+00
Ni-62(p,x)H-3	150.0	1.330E+01	1.231E-01
Ni-62(p,x)H-3	660.0	7.149E+01	8.014E+00
Ni-62(p,x)H-3	1200.0	1.511E+02	2.266E+01
Ni-62(p,x)He-3	62.0	6.427E+00	9.641E-01
Ni-62(p,x)He-3	90.0	9.230E+00	1.385E+00
Ni-62(p,x)He-3	150.0	1.220E+01	1.830E+00
Ni-62(p,x)He-3	800.0	5.834E+01	8.751E+00
Ni-62(p,x)He-3	1200.0	8.486E+01	1.273E+01
Ni-62(p,x)He-4	62.0	1.757E+02	2.636E+01
Ni-62(p,x)He-4	90.0	1.810E+02	2.715E+01
Ni-62(p,x)He-4	150.0	1.987E+02	2.981E+01
Ni-62(p,x)He-4	800.0	5.334E+02	8.001E+01
Ni-62(p,x)He-4	1200.0	6.920E+02	1.038E+02
Ni-64(p,x)H-1	62.0	7.597E+02	5.208E+01
Ni-64(p,x)H-1	90.0	9.188E+02	2.612E+01
Ni-64(p,x)H-1	1200.0	2.966E+03	4.449E+02
Ni-64(p,x)H-2	62.0	9.577E+01	1.437E+01
Ni-64(p,x)H-2	90.0	1.222E+02	1.833E+01
Ni-64(p,x)H-2	1200.0	5.339E+02	8.009E+01
Ni-64(p,x)H-3	62.0	2.008E+01	1.076E+00
Ni-64(p,x)H-3	90.0	2.607E+01	3.002E+00
Ni-64(p,x)H-3	150.0	1.531E+01	7.835E-01
Ni-64(p,x)H-3	660.0	8.198E+01	1.102E+01
Ni-64(p,x)H-3	1200.0	1.730E+02	2.595E+01
Ni-64(p,x)He-3	62.0	4.970E+00	7.455E-01
Ni-64(p,x)He-3	90.0	7.510E+00	1.127E+00
Ni-64(p,x)He-3	150.0	9.972E+00	1.496E+00
Ni-64(p,x)He-3	800.0	5.225E+01	7.838E+00
Ni-64(p,x)He-3	1200.0	7.661E+01	1.149E+01
Ni-64(p,x)He-4	62.0	1.391E+02	2.087E+01
Ni-64(p,x)He-4	90.0	1.504E+02	2.256E+01
Ni-64(p,x)He-4	150.0	1.712E+02	2.568E+01
Ni-64(p,x)He-4	800.0	5.047E+02	7.571E+01
Ni-64(p,x)He-4	1200.0	6.590E+02	9.885E+01
Cu-63(p,x)H-1	62.0	1.203E+03	4.222E+01
Cu-63(p,x)H-1	90.0	1.370E+03	2.811E+01
Cu-63(p,x)H-1	1200.0	3.279E+03	4.918E+02
Cu-63(p,x)H-2	62.0	1.043E+02	1.564E+01
Cu-63(p,x)H-2	90.0	1.385E+02	2.078E+01
Cu-63(p,x)H-2	1200.0	4.993E+02	7.490E+01
Cu-63(p,x)H-3	62.0	1.543E+01	9.708E-01
Cu-63(p,x)H-3	90.0	2.078E+01	2.934E+00
Cu-63(p,x)H-3	150.0	1.290E+01	4.225E-01
Cu-63(p,x)H-3	660.0	6.295E+01	7.419E-01
Cu-63(p,x)H-3	1200.0	1.358E+02	2.038E+01
Cu-63(p,x)He-3	62.0	9.342E+00	1.467E+00
Cu-63(p,x)He-3	90.0	1.259E+01	1.479E+00
Cu-63(p,x)He-3	150.0	1.618E+01	8.595E-01
Cu-63(p,x)He-3	800.0	5.402E+01	8.103E+00
Cu-63(p,x)He-3	1200.0	7.593E+01	1.139E+01
Cu-63(p,x)He-4	62.0	2.321E+02	4.361E+01
Cu-63(p,x)He-4	90.0	2.426E+02	1.156E+01
Cu-63(p,x)He-4	150.0	2.390E+02	1.559E+01
Cu-63(p,x)He-4	800.0	4.692E+02	7.038E+01
Cu-63(p,x)He-4	1200.0	6.048E+02	9.071E+01
Cu-65(p,x)H-1	62.0	9.361E+02	6.041E+01
Cu-65(p,x)H-1	90.0	1.120E+03	2.974E+01
Cu-65(p,x)H-1	1200.0	3.036E+03	4.555E+02
Cu-65(p,x)H-2	62.0	1.005E+02	1.507E+01
Cu-65(p,x)H-2	90.0	1.332E+02	1.997E+01
Cu-65(p,x)H-2	1200.0	5.097E+02	7.645E+01
Cu-65(p,x)H-3	62.0	1.860E+01	1.190E+00
Cu-65(p,x)H-3	90.0	2.478E+01	3.633E+00
Cu-65(p,x)H-3	150.0	1.460E+01	8.112E-01
Cu-65(p,x)H-3	660.0	7.352E+01	3.303E+00
Cu-65(p,x)H-3	1200.0	1.549E+02	2.323E+01
Cu-65(p,x)He-3	62.0	7.334E+00	1.049E+00
Cu-65(p,x)He-3	90.0	1.038E+01	1.272E+00
Cu-65(p,x)He-3	150.0	1.303E+01	7.579E-01
Cu-65(p,x)He-3	800.0	4.811E+01	7.217E+00
Cu-65(p,x)He-3	1200.0	6.806E+01	1.021E+01
Cu-65(p,x)He-4	62.0	1.974E+02	5.369E+01
Cu-65(p,x)He-4	90.0	2.103E+02	1.894E+01
Cu-65(p,x)He-4	150.0	2.190E+02	1.077E+01

Cu-65(p,x)He-4	800.0	4.491E+02	6.737E+01
Cu-65(p,x)He-4	1200.0	5.805E+02	8.708E+01
Zn-64(p,x)H-1	62.0	1.485E+03	4.166E+01
Zn-64(p,x)H-1	90.0	1.662E+03	4.274E+01
Zn-64(p,x)H-1	1200.0	3.786E+03	9.807E+01
Zn-64(p,x)H-2	62.0	1.118E+02	1.677E+01
Zn-64(p,x)H-2	90.0	1.482E+02	2.223E+01
Zn-64(p,x)H-2	1200.0	5.393E+02	1.969E+01
Zn-64(p,x)H-3	62.0	1.277E+01	6.671E-01
Zn-64(p,x)H-3	90.0	1.950E+01	2.149E+00
Zn-64(p,x)H-3	150.0	1.191E+01	4.325E-01
Zn-64(p,x)H-3	660.0	5.960E+01	1.126E+00
Zn-64(p,x)H-3	1200.0	1.324E+02	1.835E+01
Zn-64(p,x)He-3	62.0	9.338E+00	4.886E-01
Zn-64(p,x)He-3	90.0	1.340E+01	1.048E+00
Zn-64(p,x)He-3	150.0	1.851E+01	2.759E+00
Zn-64(p,x)He-3	800.0	6.875E+01	5.705E+00
Zn-64(p,x)He-3	1200.0	9.636E+01	6.179E+00
Zn-64(p,x)He-4	62.0	2.815E+02	4.740E+01
Zn-64(p,x)He-4	90.0	2.959E+02	3.189E+01
Zn-64(p,x)He-4	150.0	2.848E+02	2.650E+01
Zn-64(p,x)He-4	800.0	6.173E+02	3.104E+01
Zn-64(p,x)He-4	1200.0	7.753E+02	4.212E+01
Zn-66(p,x)H-1	62.0	1.086E+03	2.833E+01
Zn-66(p,x)H-1	90.0	1.297E+03	1.626E+01
Zn-66(p,x)H-1	1200.0	3.290E+03	2.305E+01
Zn-66(p,x)H-2	62.0	1.069E+02	1.604E+01
Zn-66(p,x)H-2	90.0	1.451E+02	2.177E+01
Zn-66(p,x)H-2	1200.0	5.228E+02	7.843E+01
Zn-66(p,x)H-3	62.0	1.601E+01	8.824E-01
Zn-66(p,x)H-3	90.0	2.326E+01	3.296E+00
Zn-66(p,x)H-3	150.0	1.345E+01	1.090E+00
Zn-66(p,x)H-3	660.0	7.052E+01	2.767E+00
Zn-66(p,x)H-3	1200.0	1.492E+02	3.456E-01
Zn-66(p,x)He-3	62.0	7.525E+00	6.230E-01
Zn-66(p,x)He-3	90.0	1.132E+01	9.498E-01
Zn-66(p,x)He-3	150.0	1.481E+01	2.151E+00
Zn-66(p,x)He-3	800.0	5.352E+01	9.945E-01
Zn-66(p,x)He-3	1200.0	7.573E+01	1.625E+00
Zn-66(p,x)He-4	62.0	2.415E+02	6.065E+01
Zn-66(p,x)He-4	90.0	2.564E+02	5.255E+01
Zn-66(p,x)He-4	150.0	2.599E+02	3.228E+01
Zn-66(p,x)He-4	800.0	4.892E+02	1.248E+01
Zn-66(p,x)He-4	1200.0	6.231E+02	1.250E+01
Zn-67(p,x)H-1	62.0	9.603E+02	1.881E+01
Zn-67(p,x)H-1	90.0	1.166E+03	1.086E+01
Zn-67(p,x)H-1	1200.0	3.173E+03	2.330E+01
Zn-67(p,x)H-2	62.0	1.178E+02	1.767E+01
Zn-67(p,x)H-2	90.0	1.523E+02	2.284E+01
Zn-67(p,x)H-2	1200.0	5.287E+02	1.353E+00
Zn-67(p,x)H-3	62.0	1.826E+01	2.373E+00
Zn-67(p,x)H-3	90.0	2.508E+01	6.464E+00
Zn-67(p,x)H-3	150.0	1.465E+01	1.443E+00
Zn-67(p,x)H-3	660.0	7.483E+01	2.671E+00
Zn-67(p,x)H-3	1200.0	1.597E+02	5.038E-01
Zn-67(p,x)He-3	62.0	8.228E+00	8.579E-01
Zn-67(p,x)He-3	90.0	1.209E+01	1.345E+00
Zn-67(p,x)He-3	150.0	1.440E+01	1.982E+00
Zn-67(p,x)He-3	800.0	4.978E+01	2.243E-01
Zn-67(p,x)He-3	1200.0	7.045E+01	1.057E+01
Zn-67(p,x)He-4	62.0	2.232E+02	6.465E+01
Zn-67(p,x)He-4	90.0	2.429E+02	6.010E+01
Zn-67(p,x)He-4	150.0	2.468E+02	3.794E+01
Zn-67(p,x)He-4	800.0	4.731E+02	1.301E+01
Zn-67(p,x)He-4	1200.0	6.079E+02	8.330E+00
Zn-68(p,x)H-1	62.0	8.400E+02	3.983E+01
Zn-68(p,x)H-1	90.0	1.047E+03	2.523E+00
Zn-68(p,x)H-1	1200.0	3.060E+03	3.196E+01
Zn-68(p,x)H-2	62.0	1.014E+02	1.522E+01
Zn-68(p,x)H-2	90.0	1.397E+02	2.095E+01
Zn-68(p,x)H-2	1200.0	5.312E+02	1.744E+00
Zn-68(p,x)H-3	62.0	1.953E+01	6.939E-01
Zn-68(p,x)H-3	90.0	2.730E+01	4.396E+00
Zn-68(p,x)H-3	150.0	1.527E+01	1.496E+00
Zn-68(p,x)H-3	660.0	7.960E+01	4.518E+00
Zn-68(p,x)H-3	1200.0	1.699E+02	2.226E+00
Zn-68(p,x)He-3	62.0	6.024E+00	5.401E-01
Zn-68(p,x)He-3	90.0	9.726E+00	8.535E-01
Zn-68(p,x)He-3	150.0	1.193E+01	1.208E+00
Zn-68(p,x)He-3	800.0	4.720E+01	7.080E+00
Zn-68(p,x)He-3	1200.0	6.699E+01	1.992E-01
Zn-68(p,x)He-4	62.0	1.976E+02	5.648E+01
Zn-68(p,x)He-4	90.0	2.178E+02	5.090E+01
Zn-68(p,x)He-4	150.0	2.290E+02	3.060E+01
Zn-68(p,x)He-4	800.0	4.540E+02	1.854E+01
Zn-68(p,x)He-4	1200.0	5.918E+02	1.430E+01
Zn-70(p,x)H-1	62.0	7.181E+02	6.317E+01
Zn-70(p,x)H-1	90.0	9.131E+02	1.834E+01
Zn-70(p,x)H-1	1200.0	2.875E+03	7.077E+01
Zn-70(p,x)H-2	62.0	9.605E+01	1.441E+01
Zn-70(p,x)H-2	90.0	1.327E+02	1.990E+01
Zn-70(p,x)H-2	1200.0	5.380E+02	3.303E+00
Zn-70(p,x)H-3	62.0	2.250E+01	5.589E-01
Zn-70(p,x)H-3	90.0	3.119E+01	4.874E+00
Zn-70(p,x)H-3	150.0	1.665E+01	1.646E+00
Zn-70(p,x)H-3	660.0	8.862E+01	7.233E+00
Zn-70(p,x)H-3	1200.0	1.893E+02	5.801E+00
Zn-70(p,x)He-3	62.0	5.001E+00	4.060E-01
Zn-70(p,x)He-3	90.0	8.479E+00	7.703E-01
Zn-70(p,x)He-3	150.0	9.685E+00	6.512E-01
Zn-70(p,x)He-3	800.0	4.241E+01	1.142E+00
Zn-70(p,x)He-3	1200.0	6.006E+01	1.341E-01
Zn-70(p,x)He-4	62.0	1.593E+02	4.004E+01
Zn-70(p,x)He-4	90.0	1.736E+02	4.687E+01
Zn-70(p,x)He-4	150.0	1.960E+02	2.491E+01
Zn-70(p,x)He-4	800.0	4.164E+02	2.515E+01
Zn-70(p,x)He-4	1200.0	5.514E+02	2.895E+01
Ga-69(p,x)H-1	62.0	1.044E+03	5.109E+01
Ga-69(p,x)H-1	90.0	1.262E+03	2.964E+01
Ga-69(p,x)H-1	1200.0	3.310E+03	4.244E+01
Ga-69(p,x)H-2	62.0	1.021E+02	1.532E+01
Ga-69(p,x)H-2	90.0	1.406E+02	2.109E+01
Ga-69(p,x)H-2	1200.0	5.492E+02	2.374E+00
Ga-69(p,x)H-3	62.0	1.760E+01	8.763E-01
Ga-69(p,x)H-3	90.0	2.473E+01	2.737E+00
Ga-69(p,x)H-3	150.0	1.449E+01	7.211E-01
Ga-69(p,x)H-3	660.0	7.601E+01	3.984E+00
Ga-69(p,x)H-3	1200.0	1.635E+02	2.162E+00
Ga-69(p,x)He-3	62.0	7.619E+00	1.020E+00
Ga-69(p,x)He-3	90.0	1.209E+01	1.383E+00
Ga-69(p,x)He-3	150.0	1.444E+01	1.582E+00
Ga-69(p,x)He-3	800.0	5.348E+01	5.053E-01
Ga-69(p,x)He-3	1200.0	7.390E+01	2.206E-01
Ga-69(p,x)He-4	62.0	2.581E+02	7.546E+01
Ga-69(p,x)He-4	90.0	2.741E+02	7.553E+01
Ga-69(p,x)He-4	150.0	2.733E+02	5.805E+01
Ga-69(p,x)He-4	800.0	5.037E+02	3.719E+01
Ga-69(p,x)He-4	1200.0	6.419E+02	3.021E+01
Ga-71(p,x)H-1	62.0	7.984E+02	5.419E+01
Ga-71(p,x)H-1	90.0	1.034E+03	2.144E+01
Ga-71(p,x)H-1	1200.0	3.091E+03	5.766E+01
Ga-71(p,x)H-2	62.0	9.726E+01	1.459E+01
Ga-71(p,x)H-2	90.0	1.346E+02	2.019E+01
Ga-71(p,x)H-2	1200.0	5.562E+02	3.661E+00
Ga-71(p,x)H-3	62.0	2.049E+01	9.897E-01
Ga-71(p,x)H-3	90.0	2.862E+01	3.025E+00
Ga-71(p,x)H-3	150.0	1.608E+01	9.610E-01
Ga-71(p,x)H-3	660.0	8.515E+01	6.737E+00
Ga-71(p,x)H-3	1200.0	1.829E+02	4.877E+00
Ga-71(p,x)He-3	62.0	5.988E+00	6.845E-01
Ga-71(p,x)He-3	90.0	1.032E+01	1.048E+00
Ga-71(p,x)He-3	150.0	1.168E+01	9.589E-01
Ga-71(p,x)He-3	800.0	4.740E+01	5.729E-01
Ga-71(p,x)He-3	1200.0	6.619E+01	2.114E-01
Ga-71(p,x)He-4	62.0	2.009E+02	5.421E+01
Ga-71(p,x)He-4	90.0	2.243E+02	6.117E+01
Ga-71(p,x)He-4	150.0	2.371E+02	4.638E+01
Ga-71(p,x)He-4	800.0	4.651E+02	3.423E+01
Ga-71(p,x)He-4	1200.0	6.062E+02	3.144E+01
Ge-70(p,x)H-1	62.0	1.237E+03	4.412E+01
Ge-70(p,x)H-1	90.0	1.482E+03	2.871E+01
Ge-70(p,x)H-1	1200.0	3.590E+03	6.188E+01
Ge-70(p,x)H-2	62.0	1.054E+02	1.582E+01
Ge-70(p,x)H-2	90.0	1.496E+02	2.244E+01
Ge-70(p,x)H-2	1200.0	5.624E+02	2.999E+00
Ge-70(p,x)H-3	62.0	1.475E+01	8.460E-01
Ge-70(p,x)H-3	90.0	2.289E+01	2.116E+00
Ge-70(p,x)H-3	150.0	1.333E+01	4.723E-01
Ge-70(p,x)H-3	660.0	7.225E+01	3.639E+00
Ge-70(p,x)H-3	1200.0	1.576E+02	8.339E-01

Ge-70(p,x)He-3	62.0	7.479E+00	7.556E-01
Ge-70(p,x)He-3	90.0	1.270E+01	1.229E+00
Ge-70(p,x)He-3	150.0	1.595E+01	2.364E+00
Ge-70(p,x)He-3	800.0	6.012E+01	2.286E+00
Ge-70(p,x)He-3	1200.0	8.158E+01	1.936E+00
Ge-70(p,x)He-4	62.0	2.808E+02	6.832E+01
Ge-70(p,x)He-4	90.0	3.123E+02	7.515E+01
Ge-70(p,x)He-4	150.0	3.117E+02	6.134E+01
Ge-70(p,x)He-4	800.0	5.490E+02	5.750E+01
Ge-70(p,x)He-4	1200.0	6.901E+02	4.122E+01
Ge-72(p,x)H-1	62.0	9.333E+02	4.114E+01
Ge-72(p,x)H-1	90.0	1.174E+03	1.199E+01
Ge-72(p,x)H-1	1200.0	3.327E+03	7.545E+01
Ge-72(p,x)H-2	62.0	1.018E+02	1.528E+01
Ge-72(p,x)H-2	90.0	1.453E+02	2.180E+01
Ge-72(p,x)H-2	1200.0	5.714E+02	4.395E+00
Ge-72(p,x)H-3	62.0	1.722E+01	1.196E+00
Ge-72(p,x)H-3	90.0	2.634E+01	3.412E+00
Ge-72(p,x)H-3	150.0	1.455E+01	9.351E-01
Ge-72(p,x)H-3	660.0	8.233E+01	6.265E+00
Ge-72(p,x)H-3	1200.0	1.772E+02	3.638E+00
Ge-72(p,x)He-3	62.0	5.952E+00	7.288E-01
Ge-72(p,x)He-3	90.0	1.074E+01	1.155E+00
Ge-72(p,x)He-3	150.0	1.251E+01	1.826E+00
Ge-72(p,x)He-3	800.0	5.262E+01	6.087E-01
Ge-72(p,x)He-3	1200.0	7.222E+01	2.680E-01
Ge-72(p,x)He-4	62.0	1.992E+02	7.531E+01
Ge-72(p,x)He-4	90.0	2.452E+02	7.435E+01
Ge-72(p,x)He-4	150.0	2.679E+02	4.745E+01
Ge-72(p,x)He-4	800.0	5.157E+02	5.585E+01
Ge-72(p,x)He-4	1200.0	6.552E+02	3.815E+01
Ge-73(p,x)H-1	62.0	8.340E+02	2.576E+01
Ge-73(p,x)H-1	90.0	1.058E+03	1.063E+01
Ge-73(p,x)H-1	1200.0	3.217E+03	8.162E+01
Ge-73(p,x)H-2	62.0	1.109E+02	1.663E+01
Ge-73(p,x)H-2	90.0	1.504E+02	2.257E+01
Ge-73(p,x)H-2	1200.0	5.764E+02	6.701E-01
Ge-73(p,x)H-3	62.0	1.951E+01	2.666E+00
Ge-73(p,x)H-3	90.0	2.772E+01	6.764E+00
Ge-73(p,x)H-3	150.0	1.524E+01	1.454E+00
Ge-73(p,x)H-3	660.0	8.629E+01	5.564E+00
Ge-73(p,x)H-3	1200.0	1.859E+02	4.980E+00
Ge-73(p,x)He-3	62.0	6.502E+00	7.329E-01
Ge-73(p,x)He-3	90.0	1.142E+01	1.505E+00
Ge-73(p,x)He-3	150.0	1.214E+01	1.801E+00
Ge-73(p,x)He-3	800.0	4.967E+01	5.584E-02
Ge-73(p,x)He-3	1200.0	6.824E+01	7.439E-01
Ge-73(p,x)He-4	62.0	1.606E+02	8.320E+01
Ge-73(p,x)He-4	90.0	2.081E+02	8.680E+01
Ge-73(p,x)He-4	150.0	2.375E+02	4.687E+01
Ge-73(p,x)He-4	800.0	4.932E+02	5.188E+01
Ge-73(p,x)He-4	1200.0	6.344E+02	3.883E+01
Ge-74(p,x)H-1	62.0	7.897E+02	6.817E+01
Ge-74(p,x)H-1	90.0	1.003E+03	2.550E+01
Ge-74(p,x)H-1	1200.0	3.124E+03	8.260E+01
Ge-74(p,x)H-2	62.0	9.437E+01	1.416E+01
Ge-74(p,x)H-2	90.0	1.351E+02	2.026E+01
Ge-74(p,x)H-2	1200.0	5.780E+02	8.669E+01
Ge-74(p,x)H-3	62.0	1.983E+01	8.048E-01
Ge-74(p,x)H-3	90.0	2.919E+01	3.887E+00
Ge-74(p,x)H-3	150.0	1.542E+01	1.376E+00
Ge-74(p,x)H-3	660.0	9.104E+01	8.484E+00
Ge-74(p,x)H-3	1200.0	1.963E+02	8.260E+00
Ge-74(p,x)He-3	62.0	4.471E+00	4.905E-01
Ge-74(p,x)He-3	90.0	8.822E+00	7.648E-01
Ge-74(p,x)He-3	150.0	1.002E+01	8.812E-01
Ge-74(p,x)He-3	800.0	4.729E+01	7.093E+00
Ge-74(p,x)He-3	1200.0	6.533E+01	7.293E-01
Ge-74(p,x)He-4	62.0	1.331E+02	6.588E+01
Ge-74(p,x)He-4	90.0	1.687E+02	7.153E+01
Ge-74(p,x)He-4	150.0	2.025E+02	4.283E+01
Ge-74(p,x)He-4	800.0	4.708E+02	5.252E+01
Ge-74(p,x)He-4	1200.0	6.144E+02	4.467E+01
Ge-76(p,x)H-1	62.0	6.775E+02	6.416E+01
Ge-76(p,x)H-1	90.0	9.031E+02	3.074E+01
Ge-76(p,x)H-1	1200.0	2.956E+03	1.038E+02
Ge-76(p,x)H-2	62.0	9.026E+01	1.354E+01
Ge-76(p,x)H-2	90.0	1.269E+02	1.903E+01
Ge-76(p,x)H-2	1200.0	5.799E+02	2.440E+00
Ge-76(p,x)H-3	62.0	2.184E+01	9.579E-01
Ge-76(p,x)H-3	90.0	3.166E+01	2.459E+00
Ge-76(p,x)H-3	150.0	1.649E+01	1.071E+00
Ge-76(p,x)H-3	660.0	9.864E+01	9.716E+00
Ge-76(p,x)H-3	1200.0	2.134E+02	7.223E+00
Ge-76(p,x)He-3	62.0	3.679E+00	4.696E-01
Ge-76(p,x)He-3	90.0	7.668E+00	6.858E-01
Ge-76(p,x)He-3	150.0	8.257E+00	4.200E-01
Ge-76(p,x)He-3	800.0	4.174E+01	7.017E-01
Ge-76(p,x)He-3	1200.0	5.858E+01	4.203E-01
Ge-76(p,x)He-4	62.0	9.185E+01	3.823E+01
Ge-76(p,x)He-4	90.0	1.221E+02	4.620E+01
Ge-76(p,x)He-4	150.0	1.600E+02	3.289E+01
Ge-76(p,x)He-4	800.0	4.222E+02	5.475E+01
Ge-76(p,x)He-4	1200.0	5.648E+02	5.220E+01
As-75(p,x)H-1	62.0	8.820E+02	5.649E+01
As-75(p,x)H-1	90.0	1.149E+03	3.239E+01
As-75(p,x)H-1	1200.0	3.359E+03	9.597E+01
As-75(p,x)H-2	62.0	9.325E+01	1.399E+01
As-75(p,x)H-2	90.0	1.355E+02	2.033E+01
As-75(p,x)H-2	1200.0	5.938E+02	5.243E+00
As-75(p,x)H-3	62.0	1.818E+01	6.878E-01
As-75(p,x)H-3	90.0	2.665E+01	1.867E+00
As-75(p,x)H-3	150.0	1.516E+01	8.140E-01
As-75(p,x)H-3	660.0	8.630E+01	5.029E+00
As-75(p,x)H-3	1200.0	1.892E+02	4.790E+00
As-75(p,x)He-3	62.0	5.896E+00	6.397E-01
As-75(p,x)He-3	90.0	1.126E+01	1.237E+00
As-75(p,x)He-3	150.0	1.197E+01	1.024E+00
As-75(p,x)He-3	800.0	5.275E+01	1.049E+00
As-75(p,x)He-3	1200.0	7.144E+01	1.368E-01
As-75(p,x)He-4	62.0	1.857E+02	6.305E+01
As-75(p,x)He-4	90.0	2.129E+02	8.571E+01
As-75(p,x)He-4	150.0	2.252E+02	6.369E+01
As-75(p,x)He-4	800.0	5.237E+02	6.974E+01
As-75(p,x)He-4	1200.0	6.674E+02	5.264E+01
Se-74(p,x)H-1	62.0	1.420E+03	9.997E+01
Se-74(p,x)H-1	90.0	1.713E+03	6.800E+01
Se-74(p,x)H-1	1200.0	3.908E+03	1.107E+02
Se-74(p,x)H-2	62.0	1.023E+02	1.535E+01
Se-74(p,x)H-2	90.0	1.508E+02	2.262E+01
Se-74(p,x)H-2	1200.0	6.008E+02	5.545E+00
Se-74(p,x)H-3	62.0	1.319E+01	8.707E-01
Se-74(p,x)H-3	90.0	2.185E+01	1.432E+00
Se-74(p,x)H-3	150.0	1.263E+01	1.765E-01
Se-74(p,x)H-3	660.0	7.340E+01	3.598E+00
Se-74(p,x)H-3	1200.0	1.642E+02	1.496E+00
Se-74(p,x)He-3	62.0	6.882E+00	5.223E-01
Se-74(p,x)He-3	90.0	1.334E+01	8.901E-01
Se-74(p,x)He-3	150.0	1.623E+01	2.095E+00
Se-74(p,x)He-3	800.0	6.554E+01	3.445E+00
Se-74(p,x)He-3	1200.0	8.805E+01	4.240E+00
Se-74(p,x)He-4	62.0	2.245E+02	8.948E+01
Se-74(p,x)He-4	90.0	2.764E+02	1.076E+02
Se-74(p,x)He-4	150.0	2.976E+02	7.642E+01
Se-74(p,x)He-4	800.0	6.087E+02	9.983E+01
Se-74(p,x)He-4	1200.0	7.539E+02	7.493E+01
Se-76(p,x)H-1	62.0	1.052E+03	6.830E+01
Se-76(p,x)H-1	90.0	1.334E+03	4.956E+01
Se-76(p,x)H-1	1200.0	3.625E+03	1.097E+02
Se-76(p,x)H-2	62.0	9.815E+01	1.472E+01
Se-76(p,x)H-2	90.0	1.430E+02	2.145E+01
Se-76(p,x)H-2	1200.0	6.111E+02	2.691E+00
Se-76(p,x)H-3	62.0	1.534E+01	6.264E-01
Se-76(p,x)H-3	90.0	2.442E+01	1.158E+00
Se-76(p,x)H-3	150.0	1.359E+01	9.680E-02
Se-76(p,x)H-3	660.0	8.263E+01	5.423E+00
Se-76(p,x)H-3	1200.0	1.835E+02	3.734E+00
Se-76(p,x)He-3	62.0	5.456E+00	4.128E-01
Se-76(p,x)He-3	90.0	1.120E+01	5.672E-01
Se-76(p,x)He-3	150.0	1.283E+01	1.266E+00
Se-76(p,x)He-3	800.0	5.824E+01	2.615E+00
Se-76(p,x)He-3	1200.0	7.828E+01	1.735E+00
Se-76(p,x)He-4	62.0	1.743E+02	5.952E+01
Se-76(p,x)He-4	90.0	2.205E+02	7.946E+01
Se-76(p,x)He-4	150.0	2.487E+02	5.766E+01
Se-76(p,x)He-4	800.0	5.713E+02	9.171E+01
Se-76(p,x)He-4	1200.0	7.205E+02	6.376E+01
Se-77(p,x)H-1	62.0	8.998E+02	3.376E+01
Se-77(p,x)H-1	90.0	1.164E+03	5.208E+00
Se-77(p,x)H-1	1200.0	3.507E+03	1.097E+02

Se-77(p,x)H-2	62.0	1.060E+02	1.590E+01
Se-77(p,x)H-2	90.0	1.497E+02	2.245E+01
Se-77(p,x)H-2	1200.0	6.123E+02	5.839E+00
Se-77(p,x)H-3	62.0	1.706E+01	1.703E+00
Se-77(p,x)H-3	90.0	2.556E+01	3.945E+00
Se-77(p,x)H-3	150.0	1.451E+01	7.216E-01
Se-77(p,x)H-3	660.0	8.682E+01	5.987E+00
Se-77(p,x)H-3	1200.0	1.924E+02	5.300E+00
Se-77(p,x)He-3	62.0	6.155E+00	5.057E-01
Se-77(p,x)He-3	90.0	1.221E+01	1.111E+00
Se-77(p,x)He-3	150.0	1.268E+01	1.471E+00
Se-77(p,x)He-3	800.0	5.482E+01	8.871E-01
Se-77(p,x)He-3	1200.0	7.375E+01	3.608E-01
Se-77(p,x)He-4	62.0	1.510E+02	4.941E+01
Se-77(p,x)He-4	90.0	1.951E+02	7.300E+01
Se-77(p,x)He-4	150.0	2.258E+02	4.577E+01
Se-77(p,x)He-4	800.0	5.473E+02	8.398E+01
Se-77(p,x)He-4	1200.0	6.973E+02	5.839E+01
Se-78(p,x)H-1	62.0	8.323E+02	5.450E+01
Se-78(p,x)H-1	90.0	1.090E+03	2.510E+01
Se-78(p,x)H-1	1200.0	3.398E+03	9.891E+01
Se-78(p,x)H-2	62.0	9.457E+01	1.419E+01
Se-78(p,x)H-2	90.0	1.369E+02	2.054E+01
Se-78(p,x)H-2	1200.0	6.183E+02	2.605E+00
Se-78(p,x)H-3	62.0	1.760E+01	7.945E-01
Se-78(p,x)H-3	90.0	2.738E+01	1.133E+00
Se-78(p,x)H-3	150.0	1.464E+01	1.986E-01
Se-78(p,x)H-3	660.0	9.121E+01	5.836E+00
Se-78(p,x)H-3	1200.0	2.035E+02	8.362E+00
Se-78(p,x)He-3	62.0	4.439E+00	5.179E-01
Se-78(p,x)He-3	90.0	9.709E+00	7.028E-01
Se-78(p,x)He-3	150.0	1.020E+01	7.568E-01
Se-78(p,x)He-3	800.0	5.178E+01	8.845E-01
Se-78(p,x)He-3	1200.0	7.010E+01	4.266E-01
Se-78(p,x)He-4	62.0	1.289E+02	3.299E+01
Se-78(p,x)He-4	90.0	1.670E+02	5.134E+01
Se-78(p,x)He-4	150.0	1.934E+02	3.418E+01
Se-78(p,x)He-4	800.0	5.225E+02	7.607E+01
Se-78(p,x)He-4	1200.0	6.728E+02	5.892E+01
Se-80(p,x)H-1	62.0	7.015E+02	5.385E+01
Se-80(p,x)H-1	90.0	9.570E+02	2.249E+01
Se-80(p,x)H-1	1200.0	3.207E+03	1.070E+02
Se-80(p,x)H-2	62.0	9.007E+01	1.351E+01
Se-80(p,x)H-2	90.0	1.311E+02	1.966E+01
Se-80(p,x)H-2	1200.0	6.183E+02	9.275E+01
Se-80(p,x)H-3	62.0	1.979E+01	5.045E-01
Se-80(p,x)H-3	90.0	2.997E+01	1.315E+00
Se-80(p,x)H-3	150.0	1.557E+01	7.821E-01
Se-80(p,x)H-3	660.0	9.811E+01	6.419E+00
Se-80(p,x)H-3	1200.0	2.198E+02	6.733E+00
Se-80(p,x)He-3	62.0	3.706E+00	5.206E-01
Se-80(p,x)He-3	90.0	8.623E+00	6.850E-01
Se-80(p,x)He-3	150.0	8.602E+00	3.875E-01
Se-80(p,x)He-3	800.0	4.664E+01	3.379E-01
Se-80(p,x)He-3	1200.0	6.289E+01	6.173E-01
Se-80(p,x)He-4	62.0	1.032E+02	2.269E+01
Se-80(p,x)He-4	90.0	1.325E+02	2.993E+01
Se-80(p,x)He-4	150.0	1.454E+02	1.924E+01
Se-80(p,x)He-4	800.0	4.686E+02	6.574E+01
Se-80(p,x)He-4	1200.0	6.211E+02	5.452E+01
Se-82(p,x)H-1	62.0	6.022E+02	5.438E+01
Se-82(p,x)H-1	90.0	8.712E+02	2.287E+01
Se-82(p,x)H-1	1200.0	3.056E+03	1.313E+02
Se-82(p,x)H-2	62.0	8.400E+01	1.260E+01
Se-82(p,x)H-2	90.0	1.237E+02	1.856E+01
Se-82(p,x)H-2	1200.0	6.206E+02	3.686E+00
Se-82(p,x)H-3	62.0	2.081E+01	1.603E+00
Se-82(p,x)H-3	90.0	3.217E+01	8.323E-01
Se-82(p,x)H-3	150.0	1.660E+01	1.828E+00
Se-82(p,x)H-3	660.0	1.031E+02	7.426E+00
Se-82(p,x)H-3	1200.0	2.346E+02	7.715E+00
Se-82(p,x)He-3	62.0	2.979E+00	4.746E-01
Se-82(p,x)He-3	90.0	7.373E+00	6.558E-01
Se-82(p,x)He-3	150.0	7.158E+00	2.907E-01
Se-82(p,x)He-3	800.0	4.131E+01	6.196E+00
Se-82(p,x)He-3	1200.0	5.693E+01	6.218E-01
Se-82(p,x)He-4	62.0	6.986E+01	1.946E+01
Se-82(p,x)He-4	90.0	1.029E+02	2.152E+01
Se-82(p,x)He-4	150.0	1.266E+02	1.939E+01
Se-82(p,x)He-4	800.0	4.157E+02	5.957E+01
Se-82(p,x)He-4	1200.0	5.706E+02	5.843E+01
Br-79(p,x)H-1	62.0	9.537E+02	4.559E+01
Br-79(p,x)H-1	90.0	1.257E+03	1.836E+01
Br-79(p,x)H-1	1200.0	3.655E+03	1.061E+02
Br-79(p,x)H-2	62.0	9.318E+01	1.398E+01
Br-79(p,x)H-2	90.0	1.389E+02	2.084E+01
Br-79(p,x)H-2	1200.0	6.339E+02	2.195E+00
Br-79(p,x)H-3	62.0	1.649E+01	7.719E-01
Br-79(p,x)H-3	90.0	2.543E+01	2.498E-01
Br-79(p,x)H-3	150.0	1.420E+01	7.298E-01
Br-79(p,x)H-3	660.0	8.816E+01	6.834E+00
Br-79(p,x)H-3	1200.0	1.952E+02	4.522E+00
Br-79(p,x)He-3	62.0	5.872E+00	4.239E-01
Br-79(p,x)He-3	90.0	1.245E+01	1.328E+00
Br-79(p,x)He-3	150.0	1.270E+01	8.003E-01
Br-79(p,x)He-3	800.0	5.869E+01	3.557E+00
Br-79(p,x)He-3	1200.0	7.767E+01	5.346E-01
Br-79(p,x)He-4	62.0	1.680E+02	3.640E+01
Br-79(p,x)He-4	90.0	2.063E+02	4.991E+01
Br-79(p,x)He-4	150.0	2.221E+02	2.531E+01
Br-79(p,x)He-4	800.0	5.694E+02	9.091E+01
Br-79(p,x)He-4	1200.0	7.249E+02	6.269E+01
Br-81(p,x)H-1	62.0	7.301E+02	4.776E+01
Br-81(p,x)H-1	90.0	1.032E+03	1.695E+01
Br-81(p,x)H-1	1200.0	3.443E+03	9.433E+01
Br-81(p,x)H-2	62.0	8.605E+01	1.291E+01
Br-81(p,x)H-2	90.0	1.307E+02	1.960E+01
Br-81(p,x)H-2	1200.0	6.398E+02	1.886E+00
Br-81(p,x)H-3	62.0	1.772E+01	7.480E-01
Br-81(p,x)H-3	90.0	2.763E+01	2.408E-01
Br-81(p,x)H-3	150.0	1.516E+01	1.107E+00
Br-81(p,x)H-3	660.0	9.468E+01	6.183E+00
Br-81(p,x)H-3	1200.0	2.148E+02	4.975E+00
Br-81(p,x)He-3	62.0	4.626E+00	2.798E-01
Br-81(p,x)He-3	90.0	1.058E+01	1.024E+00
Br-81(p,x)He-3	150.0	1.028E+01	6.909E-01
Br-81(p,x)He-3	800.0	5.130E+01	8.952E-01
Br-81(p,x)He-3	1200.0	6.837E+01	6.057E-01
Br-81(p,x)He-4	62.0	1.197E+02	2.745E+01
Br-81(p,x)He-4	90.0	1.602E+02	3.499E+01
Br-81(p,x)He-4	150.0	1.780E+02	1.319E+01
Br-81(p,x)He-4	800.0	5.181E+02	7.419E+01
Br-81(p,x)He-4	1200.0	6.759E+02	5.236E+01
Kr-78(p,x)H-1	62.0	1.530E+03	1.072E+02
Kr-78(p,x)H-1	90.0	1.876E+03	8.394E+01
Kr-78(p,x)H-1	1200.0	4.255E+03	1.407E+02
Kr-78(p,x)H-2	62.0	9.922E+01	1.488E+01
Kr-78(p,x)H-2	90.0	1.501E+02	2.252E+01
Kr-78(p,x)H-2	1200.0	6.390E+02	7.949E+00
Kr-78(p,x)H-3	62.0	1.180E+01	6.461E-01
Kr-78(p,x)H-3	90.0	2.061E+01	2.628E-02
Kr-78(p,x)H-3	150.0	1.188E+01	8.154E-01
Kr-78(p,x)H-3	660.0	7.580E+01	3.655E+00
Kr-78(p,x)H-3	1200.0	1.706E+02	2.903E+00
Kr-78(p,x)He-3	62.0	6.538E+00	3.824E-01
Kr-78(p,x)He-3	90.0	1.416E+01	3.935E-01
Kr-78(p,x)He-3	150.0	1.637E+01	1.225E+00
Kr-78(p,x)He-3	800.0	7.175E+01	5.545E+00
Kr-78(p,x)He-3	1200.0	9.361E+01	5.628E+00
Kr-78(p,x)He-4	62.0	1.816E+02	4.777E+01
Kr-78(p,x)He-4	90.0	2.337E+02	7.217E+01
Kr-78(p,x)He-4	150.0	2.621E+02	4.578E+01
Kr-78(p,x)He-4	800.0	6.503E+02	1.143E+02
Kr-78(p,x)He-4	1200.0	8.068E+02	8.820E+01
Kr-80(p,x)H-1	62.0	1.116E+03	6.919E+01
Kr-80(p,x)H-1	90.0	1.448E+03	4.359E+01
Kr-80(p,x)H-1	1200.0	3.950E+03	1.196E+02
Kr-80(p,x)H-2	62.0	9.680E+01	1.452E+01
Kr-80(p,x)H-2	90.0	1.455E+02	2.183E+01
Kr-80(p,x)H-2	1200.0	6.509E+02	3.734E+00
Kr-80(p,x)H-3	62.0	1.415E+01	6.903E-01
Kr-80(p,x)H-3	90.0	2.372E+01	1.602E-01
Kr-80(p,x)H-3	150.0	1.296E+01	7.276E-01
Kr-80(p,x)H-3	660.0	8.404E+01	4.546E+00
Kr-80(p,x)H-3	1200.0	1.895E+02	5.348E+00
Kr-80(p,x)He-3	62.0	5.279E+00	3.773E-01
Kr-80(p,x)He-3	90.0	1.215E+01	3.273E-01
Kr-80(p,x)He-3	150.0	1.310E+01	6.290E-01
Kr-80(p,x)He-3	800.0	6.391E+01	4.460E+00
Kr-80(p,x)He-3	1200.0	8.425E+01	3.219E+00

Kr-80(p,x)He-4	62.0	1.599E+02	3.452E+01
Kr-80(p,x)He-4	90.0	2.049E+02	5.252E+01
Kr-80(p,x)He-4	150.0	2.281E+02	2.469E+01
Kr-80(p,x)He-4	800.0	6.130E+02	1.034E+02
Kr-80(p,x)He-4	1200.0	7.722E+02	6.958E+01
Kr-82(p,x)H-1	62.0	8.696E+02	4.099E+01
Kr-82(p,x)H-1	90.0	1.161E+03	2.638E+01
Kr-82(p,x)H-1	1200.0	3.696E+03	9.987E+01
Kr-82(p,x)H-2	62.0	9.326E+01	1.399E+01
Kr-82(p,x)H-2	90.0	1.388E+02	2.082E+01
Kr-82(p,x)H-2	1200.0	6.568E+02	9.853E+01
Kr-82(p,x)H-3	62.0	1.540E+01	1.076E+00
Kr-82(p,x)H-3	90.0	2.621E+01	3.417E-02
Kr-82(p,x)H-3	150.0	1.388E+01	9.104E-01
Kr-82(p,x)H-3	660.0	9.083E+01	6.100E+00
Kr-82(p,x)H-3	1200.0	2.091E+02	7.370E+00
Kr-82(p,x)He-3	62.0	4.286E+00	5.257E-01
Kr-82(p,x)He-3	90.0	1.048E+01	6.069E-01
Kr-82(p,x)He-3	150.0	1.063E+01	4.449E-01
Kr-82(p,x)He-3	800.0	5.707E+01	2.362E+00
Kr-82(p,x)He-3	1200.0	7.575E+01	1.368E+00
Kr-82(p,x)He-4	62.0	1.191E+02	2.645E+01
Kr-82(p,x)He-4	90.0	1.598E+02	3.834E+01
Kr-82(p,x)He-4	150.0	1.875E+02	1.199E+01
Kr-82(p,x)He-4	800.0	5.635E+02	8.141E+01
Kr-82(p,x)He-4	1200.0	7.267E+02	5.445E+01
Kr-83(p,x)H-1	62.0	7.780E+02	2.942E+01
Kr-83(p,x)H-1	90.0	1.061E+03	1.432E+01
Kr-83(p,x)H-1	1200.0	3.588E+03	9.105E+01
Kr-83(p,x)H-2	62.0	9.968E+01	1.495E+01
Kr-83(p,x)H-2	90.0	1.443E+02	2.164E+01
Kr-83(p,x)H-2	1200.0	6.623E+02	1.529E+00
Kr-83(p,x)H-3	62.0	1.705E+01	1.490E+00
Kr-83(p,x)H-3	90.0	2.663E+01	2.645E+00
Kr-83(p,x)H-3	150.0	1.428E+01	8.345E-01
Kr-83(p,x)H-3	660.0	9.595E+01	6.809E+00
Kr-83(p,x)H-3	1200.0	2.171E+02	7.096E+00
Kr-83(p,x)He-3	62.0	4.839E+00	5.029E-01
Kr-83(p,x)He-3	90.0	1.143E+01	1.056E+00
Kr-83(p,x)He-3	150.0	1.059E+01	7.489E-01
Kr-83(p,x)He-3	800.0	5.396E+01	1.465E+00
Kr-83(p,x)He-3	1200.0	7.119E+01	1.674E+00
Kr-83(p,x)He-4	62.0	9.823E+01	2.996E+01
Kr-83(p,x)He-4	90.0	1.351E+02	4.390E+01
Kr-83(p,x)He-4	150.0	1.661E+02	1.464E+01
Kr-83(p,x)He-4	800.0	5.355E+02	7.551E+01
Kr-83(p,x)He-4	1200.0	6.994E+02	5.394E+01
Kr-84(p,x)H-1	62.0	7.095E+02	2.927E+01
Kr-84(p,x)H-1	90.0	9.892E+02	2.358E+01
Kr-84(p,x)H-1	1200.0	3.484E+03	8.979E+01
Kr-84(p,x)H-2	62.0	8.766E+01	1.315E+01
Kr-84(p,x)H-2	90.0	1.329E+02	1.993E+01
Kr-84(p,x)H-2	1200.0	6.593E+02	2.723E+00
Kr-84(p,x)H-3	62.0	1.701E+01	6.731E-01
Kr-84(p,x)H-3	90.0	2.838E+01	3.227E-01
Kr-84(p,x)H-3	150.0	1.404E+01	8.254E-01
Kr-84(p,x)H-3	660.0	9.818E+01	6.639E+00
Kr-84(p,x)H-3	1200.0	2.266E+02	8.054E+00
Kr-84(p,x)He-3	62.0	3.561E+00	5.250E-01
Kr-84(p,x)He-3	90.0	9.263E+00	6.135E-01
Kr-84(p,x)He-3	150.0	8.826E+00	2.727E-01
Kr-84(p,x)He-3	800.0	5.103E+01	2.350E+00
Kr-84(p,x)He-3	1200.0	6.750E+01	4.052E-01
Kr-84(p,x)He-4	62.0	8.491E+01	2.019E+01
Kr-84(p,x)He-4	90.0	1.174E+02	3.507E+01
Kr-84(p,x)He-4	150.0	1.362E+02	1.370E+01
Kr-84(p,x)He-4	800.0	5.085E+02	7.037E+01
Kr-84(p,x)He-4	1200.0	6.729E+02	5.196E+01
Kr-86(p,x)H-1	62.0	6.190E+02	5.457E+01
Kr-86(p,x)H-1	90.0	9.184E+02	3.206E+01
Kr-86(p,x)H-1	1200.0	3.307E+03	1.157E+02
Kr-86(p,x)H-2	62.0	8.093E+01	1.214E+01
Kr-86(p,x)H-2	90.0	1.248E+02	1.872E+01
Kr-86(p,x)H-2	1200.0	6.606E+02	1.209E+01
Kr-86(p,x)H-3	62.0	1.755E+01	1.340E+00
Kr-86(p,x)H-3	90.0	3.018E+01	8.676E-01
Kr-86(p,x)H-3	150.0	1.527E+01	1.950E+00
Kr-86(p,x)H-3	660.0	1.026E+02	5.203E+00
Kr-86(p,x)H-3	1200.0	2.406E+02	7.211E+00
Kr-86(p,x)He-3	62.0	2.879E+00	4.463E-01
Kr-86(p,x)He-3	90.0	7.945E+00	5.049E-01
Kr-86(p,x)He-3	150.0	7.393E+00	4.052E-01
Kr-86(p,x)He-3	800.0	4.607E+01	1.435E+00
Kr-86(p,x)He-3	1200.0	6.113E+01	4.988E-01
Kr-86(p,x)He-4	62.0	8.681E+01	3.412E+01
Kr-86(p,x)He-4	90.0	1.386E+02	4.539E+01
Kr-86(p,x)He-4	150.0	1.619E+02	6.176E+01
Kr-86(p,x)He-4	800.0	4.526E+02	6.449E+01
Kr-86(p,x)He-4	1200.0	6.172E+02	5.908E+01
Rb-85(p,x)H-1	62.0	7.828E+02	3.737E+01
Rb-85(p,x)H-1	90.0	1.118E+03	1.404E+01
Rb-85(p,x)H-1	1200.0	3.742E+03	7.338E+01
Rb-85(p,x)H-2	62.0	8.500E+01	1.275E+01
Rb-85(p,x)H-2	90.0	1.309E+02	1.964E+01
Rb-85(p,x)H-2	1200.0	6.794E+02	3.136E+00
Rb-85(p,x)H-3	62.0	1.533E+01	8.611E-01
Rb-85(p,x)H-3	90.0	2.551E+01	1.520E+00
Rb-85(p,x)H-3	150.0	1.391E+01	1.283E+00
Rb-85(p,x)H-3	660.0	9.547E+01	4.464E+00
Rb-85(p,x)H-3	1200.0	2.201E+02	8.082E+00
Rb-85(p,x)He-3	62.0	4.419E+00	1.578E-01
Rb-85(p,x)He-3	90.0	1.134E+01	1.211E+00
Rb-85(p,x)He-3	150.0	1.062E+01	8.976E-01
Rb-85(p,x)He-3	800.0	5.582E+01	1.344E+00
Rb-85(p,x)He-3	1200.0	7.332E+01	8.328E-02
Rb-85(p,x)He-4	62.0	1.193E+02	1.664E+01
Rb-85(p,x)He-4	90.0	1.560E+02	3.151E+01
Rb-85(p,x)He-4	150.0	1.629E+02	1.794E+01
Rb-85(p,x)He-4	800.0	5.522E+02	7.002E+01
Rb-85(p,x)He-4	1200.0	7.241E+02	4.706E+01
Rb-87(p,x)H-1	62.0	6.562E+02	7.070E+01
Rb-87(p,x)H-1	90.0	9.771E+02	3.471E+01
Rb-87(p,x)H-1	1200.0	3.526E+03	8.676E+01
Rb-87(p,x)H-2	62.0	7.909E+01	1.186E+01
Rb-87(p,x)H-2	90.0	1.220E+02	1.830E+01
Rb-87(p,x)H-2	1200.0	6.805E+02	7.799E+00
Rb-87(p,x)H-3	62.0	1.926E+01	4.617E+00
Rb-87(p,x)H-3	90.0	2.710E+01	2.633E+00
Rb-87(p,x)H-3	150.0	1.432E+01	1.945E+00
Rb-87(p,x)H-3	660.0	1.008E+02	6.200E+00
Rb-87(p,x)H-3	1200.0	2.345E+02	6.589E+00
Rb-87(p,x)He-3	62.0	4.592E+00	1.493E+00
Rb-87(p,x)He-3	90.0	1.581E+01	8.638E+00
Rb-87(p,x)He-3	150.0	8.746E+00	8.764E-01
Rb-87(p,x)He-3	800.0	5.064E+01	9.207E-01
Rb-87(p,x)He-3	1200.0	6.662E+01	6.432E-01
Rb-87(p,x)He-4	62.0	8.018E+01	1.161E+01
Rb-87(p,x)He-4	90.0	1.258E+02	1.346E+01
Rb-87(p,x)He-4	150.0	1.541E+02	3.027E+01
Rb-87(p,x)He-4	800.0	4.969E+02	6.335E+01
Rb-87(p,x)He-4	1200.0	6.670E+02	4.871E+01
Sr-84(p,x)H-1	62.0	1.202E+03	4.299E+01
Sr-84(p,x)H-1	90.0	1.569E+03	3.661E+01
Sr-84(p,x)H-1	1200.0	4.306E+03	1.092E+02
Sr-84(p,x)H-2	62.0	9.480E+01	1.422E+01
Sr-84(p,x)H-2	90.0	1.459E+02	2.189E+01
Sr-84(p,x)H-2	1200.0	6.868E+02	9.150E+00
Sr-84(p,x)H-3	62.0	1.233E+01	7.719E-01
Sr-84(p,x)H-3	90.0	2.244E+01	1.008E+00
Sr-84(p,x)H-3	150.0	1.233E+01	1.188E+00
Sr-84(p,x)H-3	660.0	8.432E+01	3.062E+00
Sr-84(p,x)H-3	1200.0	1.937E+02	2.827E+00
Sr-84(p,x)He-3	62.0	5.011E+00	4.625E-01
Sr-84(p,x)He-3	90.0	1.300E+01	5.989E-02
Sr-84(p,x)He-3	150.0	1.335E+01	3.861E-01
Sr-84(p,x)He-3	800.0	6.727E+01	3.899E+00
Sr-84(p,x)He-3	1200.0	8.726E+01	1.355E+00
Sr-84(p,x)He-4	62.0	1.499E+02	2.625E+01
Sr-84(p,x)He-4	90.0	2.023E+02	4.058E+01
Sr-84(p,x)He-4	150.0	2.221E+02	1.944E+01
Sr-84(p,x)He-4	800.0	6.405E+02	8.911E+01
Sr-84(p,x)He-4	1200.0	8.147E+02	5.522E+01
Sr-86(p,x)H-1	62.0	9.174E+02	2.311E+01
Sr-86(p,x)H-1	90.0	1.255E+03	1.315E+01
Sr-86(p,x)H-1	1200.0	4.026E+03	7.091E+01
Sr-86(p,x)H-2	62.0	9.092E+01	1.364E+01
Sr-86(p,x)H-2	90.0	1.390E+02	2.084E+01
Sr-86(p,x)H-2	1200.0	6.941E+02	4.201E+00
Sr-86(p,x)H-3	62.0	1.362E+01	8.103E-01
Sr-86(p,x)H-3	90.0	2.430E+01	1.762E+00

Sr-86(p,x)H-3	150.0	1.291E+01	1.373E+00
Sr-86(p,x)H-3	660.0	9.084E+01	3.369E+00
Sr-86(p,x)H-3	1200.0	2.123E+02	2.284E+00
Sr-86(p,x)He-3	62.0	4.104E+00	4.917E-01
Sr-86(p,x)He-3	90.0	1.129E+01	1.097E-01
Sr-86(p,x)He-3	150.0	1.103E+01	3.874E-01
Sr-86(p,x)He-3	800.0	5.995E+01	1.568E+00
Sr-86(p,x)He-3	1200.0	7.891E+01	1.123E+00
Sr-86(p,x)He-4	62.0	1.186E+02	1.539E+01
Sr-86(p,x)He-4	90.0	1.660E+02	1.996E+01
Sr-86(p,x)He-4	150.0	1.839E+02	1.042E+01
Sr-86(p,x)He-4	800.0	5.924E+02	6.973E+01
Sr-86(p,x)He-4	1200.0	7.688E+02	3.713E+01
Sr-87(p,x)H-1	62.0	8.209E+02	1.418E+01
Sr-87(p,x)H-1	90.0	1.138E+03	7.895E+00
Sr-87(p,x)H-1	1200.0	3.902E+03	4.760E+01
Sr-87(p,x)H-2	62.0	9.466E+01	1.420E+01
Sr-87(p,x)H-2	90.0	1.411E+02	2.116E+01
Sr-87(p,x)H-2	1200.0	7.012E+02	4.856E+00
Sr-87(p,x)H-3	62.0	1.414E+01	7.628E-01
Sr-87(p,x)H-3	90.0	2.400E+01	9.561E-01
Sr-87(p,x)H-3	150.0	1.321E+01	1.599E+00
Sr-87(p,x)H-3	660.0	9.555E+01	2.928E+00
Sr-87(p,x)H-3	1200.0	2.224E+02	5.580E+00
Sr-87(p,x)He-3	62.0	4.356E+00	3.253E-01
Sr-87(p,x)He-3	90.0	1.179E+01	6.260E-01
Sr-87(p,x)He-3	150.0	1.077E+01	5.037E-01
Sr-87(p,x)He-3	800.0	5.800E+01	2.642E+00
Sr-87(p,x)He-3	1200.0	7.508E+01	1.414E+00
Sr-87(p,x)He-4	62.0	1.004E+02	2.106E+01
Sr-87(p,x)He-4	90.0	1.409E+02	2.195E+01
Sr-87(p,x)He-4	150.0	1.672E+02	1.231E+01
Sr-87(p,x)He-4	800.0	5.655E+02	6.261E+01
Sr-87(p,x)He-4	1200.0	7.435E+02	4.075E+01
Sr-88(p,x)H-1	62.0	7.456E+02	1.856E+01
Sr-88(p,x)H-1	90.0	1.059E+03	4.242E+00
Sr-88(p,x)H-1	1200.0	3.781E+03	5.723E+01
Sr-88(p,x)H-2	62.0	8.374E+01	1.256E+01
Sr-88(p,x)H-2	90.0	1.299E+02	1.948E+01
Sr-88(p,x)H-2	1200.0	7.010E+02	5.749E+00
Sr-88(p,x)H-3	62.0	1.448E+01	7.890E-01
Sr-88(p,x)H-3	90.0	2.549E+01	2.599E+00
Sr-88(p,x)H-3	150.0	1.355E+01	2.045E+00
Sr-88(p,x)H-3	660.0	9.714E+01	3.119E+00
Sr-88(p,x)H-3	1200.0	2.292E+02	5.771E+00
Sr-88(p,x)He-3	62.0	3.280E+00	4.485E-01
Sr-88(p,x)He-3	90.0	1.025E+01	7.606E-01
Sr-88(p,x)He-3	150.0	1.300E+01	5.432E+00
Sr-88(p,x)He-3	800.0	5.424E+01	8.259E-01
Sr-88(p,x)He-3	1200.0	7.169E+01	7.329E-01
Sr-88(p,x)He-4	62.0	8.714E+01	1.192E+01
Sr-88(p,x)He-4	90.0	1.282E+02	7.674E+00
Sr-88(p,x)He-4	150.0	1.514E+02	2.020E+01
Sr-88(p,x)He-4	800.0	5.368E+02	5.528E+01
Sr-88(p,x)He-4	1200.0	7.152E+02	3.536E+01
Y-89(p,x)H-1	62.0	8.690E+02	1.304E+02
Y-89(p,x)H-1	90.0	1.228E+03	2.240E+01
Y-89(p,x)H-1	1200.0	4.063E+03	3.200E+01
Y-89(p,x)H-2	62.0	7.840E+01	1.176E+01
Y-89(p,x)H-2	90.0	1.241E+02	1.861E+01
Y-89(p,x)H-2	1200.0	7.160E+02	1.327E+00
Y-89(p,x)H-3	62.0	1.301E+01	1.952E+00
Y-89(p,x)H-3	90.0	2.332E+01	1.755E+00
Y-89(p,x)H-3	150.0	1.280E+01	2.061E+00
Y-89(p,x)H-3	660.0	9.414E+01	1.601E+00
Y-89(p,x)H-3	1200.0	2.226E+02	9.394E-01
Y-89(p,x)He-3	62.0	4.000E+00	6.000E-01
Y-89(p,x)He-3	90.0	1.164E+01	1.258E+00
Y-89(p,x)He-3	150.0	1.149E+01	1.720E+00
Y-89(p,x)He-3	800.0	5.900E+01	5.874E-01
Y-89(p,x)He-3	1200.0	7.650E+01	2.949E-01
Y-89(p,x)He-4	62.0	1.005E+02	1.508E+01
Y-89(p,x)He-4	90.0	1.479E+02	1.690E+01
Y-89(p,x)He-4	150.0	1.675E+02	2.886E+01
Y-89(p,x)He-4	800.0	5.786E+02	4.297E+01
Y-89(p,x)He-4	1200.0	7.615E+02	1.943E+01
Zr-90(p,x)H-1	62.0	1.064E+03	1.466E+01
Zr-90(p,x)H-1	90.0	1.438E+03	2.157E+02
Zr-90(p,x)H-1	1200.0	4.387E+03	6.580E+02
Zr-90(p,x)H-2	62.0	9.080E+01	1.362E+01
Zr-90(p,x)H-2	90.0	1.440E+02	2.160E+01
Zr-90(p,x)H-2	1200.0	7.332E+02	1.100E+02
Zr-90(p,x)H-3	62.0	1.247E+01	1.644E+00
Zr-90(p,x)H-3	90.0	2.415E+01	3.622E+00
Zr-90(p,x)H-3	150.0	1.210E+01	1.590E+00
Zr-90(p,x)H-3	660.0	9.060E+01	4.073E-01
Zr-90(p,x)H-3	1200.0	2.174E+02	3.262E+01
Zr-90(p,x)He-3	62.0	4.084E+00	5.680E-01
Zr-90(p,x)He-3	90.0	1.214E+01	1.821E+00
Zr-90(p,x)He-3	150.0	1.135E+01	5.114E-01
Zr-90(p,x)He-3	800.0	6.443E+01	1.403E+00
Zr-90(p,x)He-3	1200.0	8.191E+01	1.229E+01
Zr-90(p,x)He-4	62.0	1.080E+02	1.512E+01
Zr-90(p,x)He-4	90.0	1.570E+02	2.355E+01
Zr-90(p,x)He-4	150.0	1.799E+02	3.700E+01
Zr-90(p,x)He-4	800.0	6.167E+02	3.463E+01
Zr-90(p,x)He-4	1200.0	8.119E+02	1.218E+02
Zr-91(p,x)H-1	62.0	9.271E+02	2.417E+01
Zr-91(p,x)H-1	90.0	1.276E+03	5.062E+01
Zr-91(p,x)H-1	1200.0	4.238E+03	6.356E+02
Zr-91(p,x)H-2	62.0	1.039E+02	1.559E+01
Zr-91(p,x)H-2	90.0	1.597E+02	2.395E+01
Zr-91(p,x)H-2	1200.0	7.355E+02	1.103E+02
Zr-91(p,x)H-3	62.0	1.436E+01	8.269E-01
Zr-91(p,x)H-3	90.0	2.502E+01	1.078E+00
Zr-91(p,x)H-3	150.0	1.304E+01	1.959E+00
Zr-91(p,x)H-3	660.0	9.300E+01	7.748E-01
Zr-91(p,x)H-3	1200.0	2.246E+02	3.369E+01
Zr-91(p,x)He-3	62.0	5.464E+00	6.981E-01
Zr-91(p,x)He-3	90.0	1.451E+01	1.329E+00
Zr-91(p,x)He-3	150.0	1.205E+01	5.052E-01
Zr-91(p,x)He-3	800.0	6.090E+01	9.248E-01
Zr-91(p,x)He-3	1200.0	7.909E+01	1.186E+01
Zr-91(p,x)He-4	62.0	9.313E+01	2.319E+01
Zr-91(p,x)He-4	90.0	1.329E+02	2.227E+01
Zr-91(p,x)He-4	150.0	1.678E+02	3.297E+01
Zr-91(p,x)He-4	800.0	5.910E+02	3.438E+01
Zr-91(p,x)He-4	1200.0	7.823E+02	1.173E+02
Zr-92(p,x)H-1	62.0	8.331E+02	8.563E+00
Zr-92(p,x)H-1	90.0	1.171E+03	3.388E+01
Zr-92(p,x)H-1	1200.0	4.113E+03	6.169E+02
Zr-92(p,x)H-2	62.0	9.371E+01	1.406E+01
Zr-92(p,x)H-2	90.0	1.452E+02	2.178E+01
Zr-92(p,x)H-2	1200.0	7.370E+02	1.106E+02
Zr-92(p,x)H-3	62.0	1.871E+01	1.211E+00
Zr-92(p,x)H-3	90.0	3.259E+01	3.511E-01
Zr-92(p,x)H-3	150.0	1.511E+01	1.178E+00
Zr-92(p,x)H-3	660.0	9.624E+01	8.792E-01
Zr-92(p,x)H-3	1200.0	2.329E+02	3.493E+01
Zr-92(p,x)He-3	62.0	4.560E+00	7.917E-01
Zr-92(p,x)He-3	90.0	1.244E+01	1.250E+00
Zr-92(p,x)He-3	150.0	1.076E+01	1.654E-01
Zr-92(p,x)He-3	800.0	5.787E+01	8.721E-01
Zr-92(p,x)He-3	1200.0	7.547E+01	1.132E+01
Zr-92(p,x)He-4	62.0	9.903E+01	2.773E+01
Zr-92(p,x)He-4	90.0	1.367E+02	3.549E+01
Zr-92(p,x)He-4	150.0	1.647E+02	2.103E+01
Zr-92(p,x)He-4	800.0	5.622E+02	3.712E+01
Zr-92(p,x)He-4	1200.0	7.594E+02	1.139E+02
Zr-94(p,x)H-1	62.0	7.152E+02	4.568E+01
Zr-94(p,x)H-1	90.0	1.046E+03	1.551E+01
Zr-94(p,x)H-1	1200.0	3.875E+03	5.813E+02
Zr-94(p,x)H-2	62.0	9.975E+01	1.496E+01
Zr-94(p,x)H-2	90.0	1.544E+02	2.316E+01
Zr-94(p,x)H-2	1200.0	7.399E+02	1.110E+02
Zr-94(p,x)H-3	62.0	2.108E+01	2.674E+00
Zr-94(p,x)H-3	90.0	3.808E+01	4.633E+00
Zr-94(p,x)H-3	150.0	1.672E+01	1.227E+00
Zr-94(p,x)H-3	660.0	1.038E+02	2.098E+00
Zr-94(p,x)H-3	1200.0	2.491E+02	3.736E+01
Zr-94(p,x)He-3	62.0	3.984E+00	6.636E-01
Zr-94(p,x)He-3	90.0	1.076E+01	1.165E+00
Zr-94(p,x)He-3	150.0	9.391E+00	1.981E-01
Zr-94(p,x)He-3	800.0	5.248E+01	7.879E-01
Zr-94(p,x)He-3	1200.0	6.876E+01	1.031E+01
Zr-94(p,x)He-4	62.0	9.454E+01	6.047E+01
Zr-94(p,x)He-4	90.0	1.360E+02	7.138E+01
Zr-94(p,x)He-4	150.0	1.725E+02	4.193E+01
Zr-94(p,x)He-4	800.0	5.197E+02	4.602E+01
Zr-94(p,x)He-4	1200.0	7.134E+02	1.070E+02

Zr-96(p,x)H-1	62.0	6.271E+02	5.538E+01
Zr-96(p,x)H-1	90.0	9.458E+02	2.717E+01
Zr-96(p,x)H-1	1200.0	3.671E+03	5.507E+02
Zr-96(p,x)H-2	62.0	9.645E+01	1.447E+01
Zr-96(p,x)H-2	90.0	1.472E+02	2.207E+01
Zr-96(p,x)H-2	1200.0	7.414E+02	1.112E+02
Zr-96(p,x)H-3	62.0	2.439E+01	1.539E+00
Zr-96(p,x)H-3	90.0	4.058E+01	4.968E+00
Zr-96(p,x)H-3	150.0	1.728E+01	2.161E+00
Zr-96(p,x)H-3	660.0	1.158E+02	7.414E+00
Zr-96(p,x)H-3	1200.0	2.714E+02	4.072E+01
Zr-96(p,x)He-3	62.0	3.473E+00	6.365E-01
Zr-96(p,x)He-3	90.0	9.330E+00	1.250E+00
Zr-96(p,x)He-3	150.0	8.030E+00	3.534E-01
Zr-96(p,x)He-3	800.0	4.699E+01	1.611E+00
Zr-96(p,x)He-3	1200.0	6.389E+01	9.584E+00
Zr-96(p,x)He-4	62.0	7.956E+01	4.811E+01
Zr-96(p,x)He-4	90.0	1.139E+02	6.781E+01
Zr-96(p,x)He-4	150.0	1.378E+02	2.316E+01
Zr-96(p,x)He-4	800.0	4.780E+02	4.650E+01
Zr-96(p,x)He-4	1200.0	6.739E+02	1.011E+02
Nb-93(p,x)H-1	62.0	1.007E+03	1.225E+01
Nb-93(p,x)H-1	90.0	1.395E+03	3.368E+01
Nb-93(p,x)H-1	1200.0	4.426E+03	7.147E+01
Nb-93(p,x)H-2	62.0	9.924E+01	1.489E+01
Nb-93(p,x)H-2	90.0	1.593E+02	2.390E+01
Nb-93(p,x)H-2	1200.0	7.501E+02	1.487E+01
Nb-93(p,x)H-3	62.0	1.765E+01	7.397E-01
Nb-93(p,x)H-3	90.0	2.952E+01	2.198E-01
Nb-93(p,x)H-3	150.0	1.459E+01	1.448E+00
Nb-93(p,x)H-3	660.0	9.267E+01	3.052E+00
Nb-93(p,x)H-3	1200.0	2.252E+02	2.830E+00
Nb-93(p,x)He-3	62.0	5.636E+00	6.504E-02
Nb-93(p,x)He-3	90.0	1.468E+01	1.043E+00
Nb-93(p,x)He-3	150.0	1.262E+01	6.588E-01
Nb-93(p,x)He-3	800.0	6.271E+01	3.360E-01
Nb-93(p,x)He-3	1200.0	8.071E+01	9.231E-01
Nb-93(p,x)He-4	62.0	1.238E+02	2.691E+01
Nb-93(p,x)He-4	90.0	1.687E+02	3.686E+01
Nb-93(p,x)He-4	150.0	1.847E+02	2.170E+01
Nb-93(p,x)He-4	800.0	5.991E+02	1.982E+01
Nb-93(p,x)He-4	1200.0	8.081E+02	2.983E+01
Mo-92(p,x)H-1	62.0	1.587E+03	4.193E+01
Mo-92(p,x)H-1	90.0	2.025E+03	3.142E+01
Mo-92(p,x)H-1	1200.0	5.114E+03	1.105E+02
Mo-92(p,x)H-2	62.0	9.118E+01	1.368E+01
Mo-92(p,x)H-2	90.0	1.456E+02	2.184E+01
Mo-92(p,x)H-2	1200.0	7.550E+02	2.342E+01
Mo-92(p,x)H-3	62.0	9.658E+00	6.216E-01
Mo-92(p,x)H-3	90.0	1.948E+01	2.316E+00
Mo-92(p,x)H-3	150.0	1.090E+01	1.948E+00
Mo-92(p,x)H-3	660.0	8.232E+01	3.900E+00
Mo-92(p,x)H-3	1200.0	2.023E+02	4.913E+00
Mo-92(p,x)He-3	62.0	4.818E+00	4.902E-01
Mo-92(p,x)He-3	90.0	1.418E+01	5.438E-01
Mo-92(p,x)He-3	150.0	1.370E+01	7.382E-01
Mo-92(p,x)He-3	800.0	7.389E+01	1.108E+01
Mo-92(p,x)He-3	1200.0	9.436E+01	1.253E+00
Mo-92(p,x)He-4	62.0	1.194E+02	2.362E+01
Mo-92(p,x)He-4	90.0	1.723E+02	1.157E+01
Mo-92(p,x)He-4	150.0	1.981E+02	3.669E+01
Mo-92(p,x)He-4	800.0	6.758E+02	1.014E+02
Mo-92(p,x)He-4	1200.0	8.894E+02	5.430E+01
Mo-94(p,x)H-1	62.0	1.197E+03	3.388E+01
Mo-94(p,x)H-1	90.0	1.603E+03	8.849E+00
Mo-94(p,x)H-1	1200.0	4.763E+03	1.280E+02
Mo-94(p,x)H-2	62.0	1.054E+02	1.581E+01
Mo-94(p,x)H-2	90.0	1.657E+02	2.486E+01
Mo-94(p,x)H-2	1200.0	7.628E+02	2.839E+01
Mo-94(p,x)H-3	62.0	1.574E+01	9.534E-01
Mo-94(p,x)H-3	90.0	2.827E+01	8.519E-01
Mo-94(p,x)H-3	150.0	1.363E+01	1.378E+00
Mo-94(p,x)H-3	660.0	8.867E+01	5.465E+00
Mo-94(p,x)H-3	1200.0	2.172E+02	8.401E+00
Mo-94(p,x)He-3	62.0	5.239E+00	6.292E-01
Mo-94(p,x)He-3	90.0	1.422E+01	6.298E-01
Mo-94(p,x)He-3	150.0	1.288E+01	4.099E-01
Mo-94(p,x)He-3	800.0	6.686E+01	1.003E+01
Mo-94(p,x)He-3	1200.0	8.651E+01	1.915E+00
Mo-94(p,x)He-4	62.0	1.284E+02	3.404E+01
Mo-94(p,x)He-4	90.0	1.736E+02	4.037E+01
Mo-94(p,x)He-4	150.0	1.914E+02	2.104E+01
Mo-94(p,x)He-4	800.0	6.358E+02	9.537E+01
Mo-94(p,x)He-4	1200.0	8.528E+02	6.518E+01
Mo-95(p,x)H-1	62.0	1.042E+03	5.658E+01
Mo-95(p,x)H-1	90.0	1.420E+03	2.932E+01
Mo-95(p,x)H-1	1200.0	4.601E+03	1.503E+02
Mo-95(p,x)H-2	62.0	1.111E+02	1.667E+01
Mo-95(p,x)H-2	90.0	1.702E+02	2.553E+01
Mo-95(p,x)H-2	1200.0	7.638E+02	3.262E+01
Mo-95(p,x)H-3	62.0	1.769E+01	1.813E+00
Mo-95(p,x)H-3	90.0	3.063E+01	4.194E+00
Mo-95(p,x)H-3	150.0	1.488E+01	9.322E-01
Mo-95(p,x)H-3	660.0	9.231E+01	5.343E+00
Mo-95(p,x)H-3	1200.0	2.280E+02	1.148E+01
Mo-95(p,x)He-3	62.0	5.517E+00	4.045E-01
Mo-95(p,x)He-3	90.0	1.441E+01	1.065E+00
Mo-95(p,x)He-3	150.0	1.245E+01	5.454E-01
Mo-95(p,x)He-3	800.0	6.326E+01	9.488E+00
Mo-95(p,x)He-3	1200.0	8.280E+01	3.430E+00
Mo-95(p,x)He-4	62.0	1.327E+02	6.085E+01
Mo-95(p,x)He-4	90.0	1.751E+02	7.783E+01
Mo-95(p,x)He-4	150.0	1.894E+02	1.140E+01
Mo-95(p,x)He-4	800.0	6.165E+02	9.248E+01
Mo-95(p,x)He-4	1200.0	8.374E+02	7.127E+01
Mo-96(p,x)H-1	62.0	8.918E+02	6.532E+01
Mo-96(p,x)H-1	90.0	1.276E+03	4.769E+01
Mo-96(p,x)H-1	1200.0	4.454E+03	1.483E+02
Mo-96(p,x)H-2	62.0	1.030E+02	1.545E+01
Mo-96(p,x)H-2	90.0	1.610E+02	2.416E+01
Mo-96(p,x)H-2	1200.0	7.677E+02	2.846E+01
Mo-96(p,x)H-3	62.0	1.845E+01	1.471E+00
Mo-96(p,x)H-3	90.0	3.328E+01	1.832E+00
Mo-96(p,x)H-3	150.0	1.528E+01	4.534E-01
Mo-96(p,x)H-3	660.0	9.739E+01	7.794E-01
Mo-96(p,x)H-3	1200.0	2.370E+02	1.219E+01
Mo-96(p,x)He-3	62.0	4.541E+00	4.608E-01
Mo-96(p,x)He-3	90.0	1.226E+01	5.545E-01
Mo-96(p,x)He-3	150.0	1.086E+01	3.751E-01
Mo-96(p,x)He-3	800.0	6.015E+01	9.022E+00
Mo-96(p,x)He-3	1200.0	7.956E+01	2.871E+00
Mo-96(p,x)He-4	62.0	1.317E+02	6.145E+01
Mo-96(p,x)He-4	90.0	1.722E+02	8.725E+01
Mo-96(p,x)He-4	150.0	1.740E+02	2.657E+01
Mo-96(p,x)He-4	800.0	6.040E+02	9.061E+01
Mo-96(p,x)He-4	1200.0	8.249E+02	7.653E+01
Mo-97(p,x)H-1	62.0	7.966E+02	5.333E+01
Mo-97(p,x)H-1	90.0	1.160E+03	4.357E+01
Mo-97(p,x)H-1	1200.0	4.291E+03	1.085E+02
Mo-97(p,x)H-2	62.0	1.071E+02	1.607E+01
Mo-97(p,x)H-2	90.0	1.631E+02	2.446E+01
Mo-97(p,x)H-2	1200.0	7.704E+02	2.126E+01
Mo-97(p,x)H-3	62.0	2.028E+01	2.088E+00
Mo-97(p,x)H-3	90.0	3.440E+01	5.811E+00
Mo-97(p,x)H-3	150.0	1.619E+01	1.194E+00
Mo-97(p,x)H-3	660.0	1.021E+02	3.919E-01
Mo-97(p,x)H-3	1200.0	2.459E+02	9.464E+00
Mo-97(p,x)He-3	62.0	4.904E+00	3.857E-01
Mo-97(p,x)He-3	90.0	1.269E+01	1.046E+00
Mo-97(p,x)He-3	150.0	1.091E+01	3.085E-01
Mo-97(p,x)He-3	800.0	5.723E+01	8.585E+00
Mo-97(p,x)He-3	1200.0	7.642E+01	2.398E+00
Mo-97(p,x)He-4	62.0	1.224E+02	6.481E+01
Mo-97(p,x)He-4	90.0	1.604E+02	9.578E+01
Mo-97(p,x)He-4	150.0	1.620E+02	3.582E+01
Mo-97(p,x)He-4	800.0	5.841E+02	8.761E+01
Mo-97(p,x)He-4	1200.0	8.050E+02	4.840E+01
Mo-98(p,x)H-1	62.0	7.229E+02	6.116E+01
Mo-98(p,x)H-1	90.0	1.074E+03	4.293E+01
Mo-98(p,x)H-1	1200.0	4.149E+03	5.574E+01
Mo-98(p,x)H-2	62.0	9.949E+01	1.492E+01
Mo-98(p,x)H-2	90.0	1.547E+02	2.321E+01
Mo-98(p,x)H-2	1200.0	7.702E+02	1.189E+01
Mo-98(p,x)H-3	62.0	2.068E+01	1.629E+00
Mo-98(p,x)H-3	90.0	3.663E+01	2.458E+00
Mo-98(p,x)H-3	150.0	1.698E+01	1.213E+00
Mo-98(p,x)H-3	660.0	1.079E+02	4.236E+00
Mo-98(p,x)H-3	1200.0	2.555E+02	4.235E+00
Mo-98(p,x)He-3	62.0	4.109E+00	4.932E-01
Mo-98(p,x)He-3	90.0	1.090E+01	8.282E-01

Mo-98(p,x)He-3	150.0	9.820E+00	2.674E-01
Mo-98(p,x)He-3	800.0	5.527E+01	8.290E+00
Mo-98(p,x)He-3	1200.0	7.401E+01	1.369E+00
Mo-98(p,x)He-4	62.0	1.123E+02	5.021E+01
Mo-98(p,x)He-4	90.0	1.584E+02	7.896E+01
Mo-98(p,x)He-4	150.0	1.594E+02	3.538E+01
Mo-98(p,x)He-4	800.0	5.710E+02	8.565E+01
Mo-98(p,x)He-4	1200.0	7.893E+02	2.995E+01
Mo-100(p,x)H-1	62.0	6.732E+02	6.909E+01
Mo-100(p,x)H-1	90.0	9.910E+02	5.530E+01
Mo-100(p,x)H-1	1200.0	3.894E+03	3.184E+01
Mo-100(p,x)H-2	62.0	9.616E+01	1.442E+01
Mo-100(p,x)H-2	90.0	1.496E+02	2.244E+01
Mo-100(p,x)H-2	1200.0	7.683E+02	1.331E+00
Mo-100(p,x)H-3	62.0	2.297E+01	2.070E+00
Mo-100(p,x)H-3	90.0	4.026E+01	3.736E+00
Mo-100(p,x)H-3	150.0	1.812E+01	1.805E+00
Mo-100(p,x)H-3	660.0	1.186E+02	1.011E+01
Mo-100(p,x)H-3	1200.0	2.770E+02	1.968E+00
Mo-100(p,x)He-3	62.0	3.707E+00	4.504E-01
Mo-100(p,x)He-3	90.0	9.605E+00	9.485E-01
Mo-100(p,x)He-3	150.0	8.518E+00	1.984E-01
Mo-100(p,x)He-3	800.0	5.031E+01	7.546E+00
Mo-100(p,x)He-3	1200.0	6.911E+01	1.309E-01
Mo-100(p,x)He-4	62.0	7.831E+01	4.459E+01
Mo-100(p,x)He-4	90.0	1.289E+02	7.296E+01
Mo-100(p,x)He-4	150.0	1.519E+02	4.289E+01
Mo-100(p,x)He-4	800.0	5.342E+02	8.013E+01
Mo-100(p,x)He-4	1200.0	7.550E+02	1.980E+01
Ru-96(p,x)H-1	62.0	1.654E+03	6.992E+01
Ru-96(p,x)H-1	90.0	2.158E+03	5.777E+01
Ru-96(p,x)H-1	1200.0	5.535E+03	2.628E+02
Ru-96(p,x)H-2	62.0	1.079E+02	1.619E+01
Ru-96(p,x)H-2	90.0	1.711E+02	2.567E+01
Ru-96(p,x)H-2	1200.0	7.817E+02	6.358E+01
Ru-96(p,x)H-3	62.0	1.285E+01	8.109E-01
Ru-96(p,x)H-3	90.0	2.439E+01	1.428E+00
Ru-96(p,x)H-3	150.0	1.242E+01	1.514E+00
Ru-96(p,x)H-3	660.0	8.103E+01	7.181E+00
Ru-96(p,x)H-3	1200.0	2.028E+02	1.854E+01
Ru-96(p,x)He-3	62.0	5.984E+00	5.360E-01
Ru-96(p,x)He-3	90.0	1.610E+01	1.435E-01
Ru-96(p,x)He-3	150.0	1.524E+01	3.197E-01
Ru-96(p,x)He-3	800.0	7.619E+01	2.055E+00
Ru-96(p,x)He-3	1200.0	9.833E+01	6.941E+00
Ru-96(p,x)He-4	62.0	1.480E+02	3.739E+01
Ru-96(p,x)He-4	90.0	1.978E+02	4.388E+01
Ru-96(p,x)He-4	150.0	2.119E+02	2.358E+01
Ru-96(p,x)He-4	800.0	6.963E+02	6.374E+01
Ru-96(p,x)He-4	1200.0	9.388E+02	1.579E+02
Ru-98(p,x)H-1	62.0	1.209E+03	1.262E+02
Ru-98(p,x)H-1	90.0	1.647E+03	1.298E+02
Ru-98(p,x)H-1	1200.0	5.106E+03	1.759E+02
Ru-98(p,x)H-2	62.0	1.054E+02	1.582E+01
Ru-98(p,x)H-2	90.0	1.663E+02	2.495E+01
Ru-98(p,x)H-2	1200.0	7.898E+02	4.350E+01
Ru-98(p,x)H-3	62.0	1.543E+01	9.901E-01
Ru-98(p,x)H-3	90.0	2.858E+01	2.533E-01
Ru-98(p,x)H-3	150.0	1.384E+01	1.984E-01
Ru-98(p,x)H-3	660.0	8.870E+01	8.005E+00
Ru-98(p,x)H-3	1200.0	2.196E+02	1.856E+01
Ru-98(p,x)He-3	62.0	5.225E+00	3.442E-01
Ru-98(p,x)He-3	90.0	1.397E+01	1.400E-01
Ru-98(p,x)He-3	150.0	1.293E+01	2.852E-01
Ru-98(p,x)He-3	800.0	6.868E+01	4.127E+00
Ru-98(p,x)He-3	1200.0	9.105E+01	5.384E+00
Ru-98(p,x)He-4	62.0	1.674E+02	6.335E+01
Ru-98(p,x)He-4	90.0	2.166E+02	9.356E+01
Ru-98(p,x)He-4	150.0	2.116E+02	2.547E+01
Ru-98(p,x)He-4	800.0	6.830E+02	7.810E+01
Ru-98(p,x)He-4	1200.0	9.203E+02	1.179E+02
Ru-99(p,x)H-1	62.0	1.049E+03	1.062E+02
Ru-99(p,x)H-1	90.0	1.449E+03	1.078E+02
Ru-99(p,x)H-1	1200.0	4.917E+03	1.336E+02
Ru-99(p,x)H-2	62.0	1.110E+02	1.665E+01
Ru-99(p,x)H-2	90.0	1.708E+02	2.563E+01
Ru-99(p,x)H-2	1200.0	7.903E+02	3.760E+01
Ru-99(p,x)H-3	62.0	1.719E+01	1.289E+00
Ru-99(p,x)H-3	90.0	2.972E+01	2.965E+00
Ru-99(p,x)H-3	150.0	1.485E+01	7.723E-01
Ru-99(p,x)H-3	660.0	9.435E+01	4.930E+00
Ru-99(p,x)H-3	1200.0	2.301E+02	1.606E+01
Ru-99(p,x)He-3	62.0	5.728E+00	1.720E-01
Ru-99(p,x)He-3	90.0	1.453E+01	7.051E-01
Ru-99(p,x)He-3	150.0	1.306E+01	4.893E-01
Ru-99(p,x)He-3	800.0	6.610E+01	3.560E+00
Ru-99(p,x)He-3	1200.0	8.796E+01	3.966E+00
Ru-99(p,x)He-4	62.0	1.644E+02	6.171E+01
Ru-99(p,x)He-4	90.0	2.123E+02	9.667E+01
Ru-99(p,x)He-4	150.0	2.107E+02	3.322E+01
Ru-99(p,x)He-4	800.0	6.747E+02	7.443E+01
Ru-99(p,x)He-4	1200.0	9.134E+02	9.469E+01
Ru-100(p,x)H-1	62.0	9.640E+02	9.809E+01
Ru-100(p,x)H-1	90.0	1.327E+03	1.178E+02
Ru-100(p,x)H-1	1200.0	4.725E+03	9.844E+01
Ru-100(p,x)H-2	62.0	1.013E+02	1.520E+01
Ru-100(p,x)H-2	90.0	1.580E+02	2.370E+01
Ru-100(p,x)H-2	1200.0	7.937E+02	2.848E+01
Ru-100(p,x)H-3	62.0	1.764E+01	8.744E-01
Ru-100(p,x)H-3	90.0	3.158E+01	2.244E-01
Ru-100(p,x)H-3	150.0	1.501E+01	4.191E-01
Ru-100(p,x)H-3	660.0	1.001E+02	8.612E-01
Ru-100(p,x)H-3	1200.0	2.406E+02	9.295E+00
Ru-100(p,x)He-3	62.0	4.519E+00	2.515E-01
Ru-100(p,x)He-3	90.0	1.198E+01	4.122E-02
Ru-100(p,x)He-3	150.0	1.109E+01	3.304E-01
Ru-100(p,x)He-3	800.0	6.254E+01	1.740E+00
Ru-100(p,x)He-3	1200.0	8.429E+01	3.605E+00
Ru-100(p,x)He-4	62.0	1.450E+02	4.181E+01
Ru-100(p,x)He-4	90.0	1.936E+02	7.847E+01
Ru-100(p,x)He-4	150.0	1.953E+02	3.241E+01
Ru-100(p,x)He-4	800.0	6.627E+02	7.301E+01
Ru-100(p,x)He-4	1200.0	9.006E+02	5.985E+01
Ru-101(p,x)H-1	62.0	8.589E+02	8.339E+01
Ru-101(p,x)H-1	90.0	1.210E+03	8.784E+01
Ru-101(p,x)H-1	1200.0	4.565E+03	5.883E+01
Ru-101(p,x)H-2	62.0	1.075E+02	1.613E+01
Ru-101(p,x)H-2	90.0	1.637E+02	2.455E+01
Ru-101(p,x)H-2	1200.0	7.965E+02	1.673E+01
Ru-101(p,x)H-3	62.0	1.950E+01	1.374E+00
Ru-101(p,x)H-3	90.0	3.274E+01	3.347E+00
Ru-101(p,x)H-3	150.0	1.581E+01	8.998E-01
Ru-101(p,x)H-3	660.0	1.058E+02	7.931E-01
Ru-101(p,x)H-3	1200.0	2.511E+02	6.170E+00
Ru-101(p,x)He-3	62.0	5.124E+00	1.807E-01
Ru-101(p,x)He-3	90.0	1.281E+01	6.578E-01
Ru-101(p,x)He-3	150.0	1.129E+01	4.475E-01
Ru-101(p,x)He-3	800.0	6.046E+01	1.929E+00
Ru-101(p,x)He-3	1200.0	8.224E+01	2.400E+00
Ru-101(p,x)He-4	62.0	1.269E+02	3.879E+01
Ru-101(p,x)He-4	90.0	1.736E+02	7.740E+01
Ru-101(p,x)He-4	150.0	1.809E+02	3.555E+01
Ru-101(p,x)He-4	800.0	6.499E+02	5.714E+01
Ru-101(p,x)He-4	1200.0	8.885E+02	3.116E+01
Ru-102(p,x)H-1	62.0	8.285E+02	9.264E+01
Ru-102(p,x)H-1	90.0	1.163E+03	1.036E+02
Ru-102(p,x)H-1	1200.0	4.412E+03	2.808E+01
Ru-102(p,x)H-2	62.0	9.813E+01	1.472E+01
Ru-102(p,x)H-2	90.0	1.525E+02	2.288E+01
Ru-102(p,x)H-2	1200.0	7.966E+02	8.630E+00
Ru-102(p,x)H-3	62.0	1.991E+01	7.982E-01
Ru-102(p,x)H-3	90.0	3.430E+01	1.892E-01
Ru-102(p,x)H-3	150.0	1.566E+01	7.720E-01
Ru-102(p,x)H-3	660.0	1.097E+02	2.275E+00
Ru-102(p,x)H-3	1200.0	2.617E+02	2.347E+00
Ru-102(p,x)He-3	62.0	4.056E+00	2.403E-01
Ru-102(p,x)He-3	90.0	1.067E+01	2.518E-01
Ru-102(p,x)He-3	150.0	9.536E+00	4.187E-01
Ru-102(p,x)He-3	800.0	5.773E+01	1.166E+00
Ru-102(p,x)He-3	1200.0	7.916E+01	1.225E+00
Ru-102(p,x)He-4	62.0	1.109E+02	2.396E+01
Ru-102(p,x)He-4	90.0	1.517E+02	5.770E+01
Ru-102(p,x)He-4	150.0	1.578E+02	3.722E+01
Ru-102(p,x)He-4	800.0	6.314E+02	3.347E+01
Ru-102(p,x)He-4	1200.0	8.762E+02	3.243E+00
Ru-104(p,x)H-1	62.0	7.434E+02	8.546E+01
Ru-104(p,x)H-1	90.0	1.062E+03	8.521E+01
Ru-104(p,x)H-1	1200.0	4.161E+03	5.896E+01
Ru-104(p,x)H-2	62.0	9.398E+01	1.410E+01
Ru-104(p,x)H-2	90.0	1.458E+02	2.187E+01

Ru-104(p,x)H-2	1200.0	8.018E+02	2.066E+01
Ru-104(p,x)H-3	62.0	2.223E+01	6.574E-01
Ru-104(p,x)H-3	90.0	3.699E+01	1.229E-01
Ru-104(p,x)H-3	150.0	1.699E+01	9.219E-01
Ru-104(p,x)H-3	660.0	1.199E+02	8.821E+00
Ru-104(p,x)H-3	1200.0	2.865E+02	1.251E+01
Ru-104(p,x)He-3	62.0	3.534E+00	2.055E-01
Ru-104(p,x)He-3	90.0	9.202E+00	3.323E-01
Ru-104(p,x)He-3	150.0	8.400E+00	4.370E-01
Ru-104(p,x)He-3	800.0	5.371E+01	6.995E-01
Ru-104(p,x)He-3	1200.0	7.404E+01	1.221E+00
Ru-104(p,x)He-4	62.0	9.370E+01	1.280E+01
Ru-104(p,x)He-4	90.0	1.324E+02	3.108E+01
Ru-104(p,x)He-4	150.0	1.298E+02	2.648E+01
Ru-104(p,x)He-4	800.0	5.918E+02	1.415E+01
Ru-104(p,x)He-4	1200.0	8.472E+02	4.669E+01
Rh-103(p,x)H-1	62.0	8.591E+02	9.857E+01
Rh-103(p,x)H-1	90.0	1.229E+03	9.743E+01
Rh-103(p,x)H-1	1200.0	4.710E+03	3.506E+01
Rh-103(p,x)H-2	62.0	9.347E+01	1.402E+01
Rh-103(p,x)H-2	90.0	1.511E+02	2.267E+01
Rh-103(p,x)H-2	1200.0	8.125E+02	1.037E+01
Rh-103(p,x)H-3	62.0	1.894E+01	1.448E+00
Rh-103(p,x)H-3	90.0	3.168E+01	9.951E-01
Rh-103(p,x)H-3	150.0	1.574E+01	5.614E-01
Rh-103(p,x)H-3	660.0	1.048E+02	2.676E-01
Rh-103(p,x)H-3	1200.0	2.557E+02	2.737E+00
Rh-103(p,x)He-3	62.0	5.210E+00	6.571E-01
Rh-103(p,x)He-3	90.0	1.279E+01	1.479E+00
Rh-103(p,x)He-3	150.0	1.155E+01	1.182E+00
Rh-103(p,x)He-3	800.0	6.165E+01	2.078E+00
Rh-103(p,x)He-3	1200.0	8.451E+01	2.731E+00
Rh-103(p,x)He-4	62.0	1.443E+02	2.892E+01
Rh-103(p,x)He-4	90.0	1.966E+02	5.370E+01
Rh-103(p,x)He-4	150.0	1.946E+02	2.511E+01
Rh-103(p,x)He-4	800.0	6.770E+02	5.928E+01
Rh-103(p,x)He-4	1200.0	9.381E+02	2.028E+01
Pd-102(p,x)H-1	62.0	1.311E+03	1.317E+02
Pd-102(p,x)H-1	90.0	1.717E+03	1.819E+02
Pd-102(p,x)H-1	1200.0	5.418E+03	1.098E+02
Pd-102(p,x)H-2	62.0	1.059E+02	1.589E+01
Pd-102(p,x)H-2	90.0	1.663E+02	2.494E+01
Pd-102(p,x)H-2	1200.0	8.067E+02	4.408E+01
Pd-102(p,x)H-3	62.0	1.490E+01	6.450E-01
Pd-102(p,x)H-3	90.0	2.747E+01	9.071E-01
Pd-102(p,x)H-3	150.0	1.381E+01	1.695E-01
Pd-102(p,x)H-3	660.0	9.084E+01	7.752E+00
Pd-102(p,x)H-3	1200.0	2.227E+02	1.874E+01
Pd-102(p,x)He-3	62.0	5.432E+00	2.235E-01
Pd-102(p,x)He-3	90.0	1.406E+01	2.285E-01
Pd-102(p,x)He-3	150.0	1.342E+01	3.158E-01
Pd-102(p,x)He-3	800.0	7.117E+01	3.162E+00
Pd-102(p,x)He-3	1200.0	9.534E+01	6.904E+00
Pd-102(p,x)He-4	62.0	1.810E+02	5.074E+01
Pd-102(p,x)He-4	90.0	2.398E+02	8.093E+01
Pd-102(p,x)He-4	150.0	2.409E+02	3.164E+01
Pd-102(p,x)He-4	800.0	7.381E+02	1.298E+02
Pd-102(p,x)He-4	1200.0	9.973E+02	1.047E+02
Pd-104(p,x)H-1	62.0	1.066E+03	9.348E+01
Pd-104(p,x)H-1	90.0	1.418E+03	1.387E+02
Pd-104(p,x)H-1	1200.0	5.038E+03	3.908E+01
Pd-104(p,x)H-2	62.0	1.026E+02	1.538E+01
Pd-104(p,x)H-2	90.0	1.601E+02	2.402E+01
Pd-104(p,x)H-2	1200.0	8.163E+02	1.997E+01
Pd-104(p,x)H-3	62.0	1.709E+01	5.768E-01
Pd-104(p,x)H-3	90.0	3.036E+01	8.964E-01
Pd-104(p,x)H-3	150.0	1.475E+01	2.237E-01
Pd-104(p,x)H-3	660.0	1.006E+02	2.130E+00
Pd-104(p,x)H-3	1200.0	2.452E+02	9.064E+00
Pd-104(p,x)He-3	62.0	4.788E+00	1.808E-01
Pd-104(p,x)He-3	90.0	1.230E+01	1.181E-01
Pd-104(p,x)He-3	150.0	1.163E+01	5.290E-01
Pd-104(p,x)He-3	800.0	6.580E+01	3.431E+00
Pd-104(p,x)He-3	1200.0	8.935E+01	3.400E+00
Pd-104(p,x)He-4	62.0	1.529E+02	2.721E+01
Pd-104(p,x)He-4	90.0	2.046E+02	5.266E+01
Pd-104(p,x)He-4	150.0	2.144E+02	2.436E+01
Pd-104(p,x)He-4	800.0	7.203E+02	9.230E+01
Pd-104(p,x)He-4	1200.0	9.846E+02	4.623E+01
Pd-105(p,x)H-1	62.0	9.570E+02	8.454E+01
Pd-105(p,x)H-1	90.0	1.293E+03	1.031E+02
Pd-105(p,x)H-1	1200.0	4.877E+03	1.426E+01
Pd-105(p,x)H-2	62.0	1.093E+02	1.640E+01
Pd-105(p,x)H-2	90.0	1.653E+02	2.479E+01
Pd-105(p,x)H-2	1200.0	8.222E+02	2.859E+00
Pd-105(p,x)H-3	62.0	1.892E+01	1.217E+00
Pd-105(p,x)H-3	90.0	3.112E+01	1.655E+00
Pd-105(p,x)H-3	150.0	1.544E+01	6.950E-01
Pd-105(p,x)H-3	660.0	1.060E+02	1.813E+00
Pd-105(p,x)H-3	1200.0	2.584E+02	1.108E+00
Pd-105(p,x)He-3	62.0	5.389E+00	3.136E-01
Pd-105(p,x)He-3	90.0	1.298E+01	6.456E-01
Pd-105(p,x)He-3	150.0	1.170E+01	6.020E-01
Pd-105(p,x)He-3	800.0	6.416E+01	1.023E+00
Pd-105(p,x)He-3	1200.0	8.684E+01	1.101E+00
Pd-105(p,x)He-4	62.0	1.386E+02	2.451E+01
Pd-105(p,x)He-4	90.0	1.864E+02	4.965E+01
Pd-105(p,x)He-4	150.0	2.035E+02	1.784E+01
Pd-105(p,x)He-4	800.0	7.028E+02	6.642E+01
Pd-105(p,x)He-4	1200.0	9.791E+02	1.401E+01
Pd-106(p,x)H-1	62.0	9.113E+02	9.100E+01
Pd-106(p,x)H-1	90.0	1.231E+03	1.034E+02
Pd-106(p,x)H-1	1200.0	4.714E+03	1.987E+01
Pd-106(p,x)H-2	62.0	9.812E+01	1.472E+01
Pd-106(p,x)H-2	90.0	1.536E+02	2.305E+01
Pd-106(p,x)H-2	1200.0	8.300E+02	1.145E+01
Pd-106(p,x)H-3	62.0	1.917E+01	5.872E-01
Pd-106(p,x)H-3	90.0	3.286E+01	1.027E+00
Pd-106(p,x)H-3	150.0	1.543E+01	2.963E-01
Pd-106(p,x)H-3	660.0	1.111E+02	5.204E+00
Pd-106(p,x)H-3	1200.0	2.716E+02	5.389E+00
Pd-106(p,x)He-3	62.0	4.215E+00	1.627E-01
Pd-106(p,x)He-3	90.0	1.072E+01	1.736E-01
Pd-106(p,x)He-3	150.0	1.009E+01	5.822E-01
Pd-106(p,x)He-3	800.0	6.102E+01	9.019E-01
Pd-106(p,x)He-3	1200.0	8.404E+01	1.092E+00
Pd-106(p,x)He-4	62.0	1.189E+02	9.456E+00
Pd-106(p,x)He-4	90.0	1.668E+02	3.347E+01
Pd-106(p,x)He-4	150.0	1.876E+02	1.630E+01
Pd-106(p,x)He-4	800.0	6.813E+02	4.750E+01
Pd-106(p,x)He-4	1200.0	9.640E+02	2.052E+01
Pd-108(p,x)H-1	62.0	8.027E+02	8.006E+01
Pd-108(p,x)H-1	90.0	1.116E+03	8.465E+01
Pd-108(p,x)H-1	1200.0	4.446E+03	5.524E+01
Pd-108(p,x)H-2	62.0	9.438E+01	1.416E+01
Pd-108(p,x)H-2	90.0	1.471E+02	2.206E+01
Pd-108(p,x)H-2	1200.0	8.328E+02	2.215E+01
Pd-108(p,x)H-3	62.0	2.144E+01	1.089E+00
Pd-108(p,x)H-3	90.0	3.546E+01	1.507E+00
Pd-108(p,x)H-3	150.0	1.620E+01	4.288E-01
Pd-108(p,x)H-3	660.0	1.191E+02	8.726E+00
Pd-108(p,x)H-3	1200.0	2.950E+02	1.006E+01
Pd-108(p,x)He-3	62.0	3.783E+00	1.149E-01
Pd-108(p,x)He-3	90.0	9.443E+00	1.280E-01
Pd-108(p,x)He-3	150.0	8.831E+00	5.217E-01
Pd-108(p,x)He-3	800.0	5.663E+01	9.682E-01
Pd-108(p,x)He-3	1200.0	7.847E+01	1.084E+00
Pd-108(p,x)He-4	62.0	9.161E+01	4.203E+00
Pd-108(p,x)He-4	90.0	1.322E+02	2.329E+01
Pd-108(p,x)He-4	150.0	1.490E+02	2.065E+01
Pd-108(p,x)He-4	800.0	6.352E+02	3.028E+01
Pd-108(p,x)He-4	1200.0	9.276E+02	4.862E+01
Pd-110(p,x)H-1	62.0	7.545E+02	7.832E+01
Pd-110(p,x)H-1	90.0	1.053E+03	7.837E+01
Pd-110(p,x)H-1	1200.0	4.229E+03	7.904E+01
Pd-110(p,x)H-2	62.0	9.281E+01	1.392E+01
Pd-110(p,x)H-2	90.0	1.434E+02	2.150E+01
Pd-110(p,x)H-2	1200.0	8.385E+02	2.813E+01
Pd-110(p,x)H-3	62.0	2.252E+01	1.070E+00
Pd-110(p,x)H-3	90.0	3.738E+01	7.278E-01
Pd-110(p,x)H-3	150.0	1.673E+01	6.619E-01
Pd-110(p,x)H-3	660.0	1.272E+02	1.418E+01
Pd-110(p,x)H-3	1200.0	3.198E+02	1.889E+01
Pd-110(p,x)He-3	62.0	3.459E+00	1.269E-01
Pd-110(p,x)He-3	90.0	8.467E+00	4.338E-01
Pd-110(p,x)He-3	150.0	7.891E+00	4.408E-01
Pd-110(p,x)He-3	800.0	5.239E+01	4.864E-01
Pd-110(p,x)He-3	1200.0	7.419E+01	2.635E+00
Pd-110(p,x)He-4	62.0	6.388E+01	1.086E+01
Pd-110(p,x)He-4	90.0	1.055E+02	1.907E+01

Pd-110(p,x)He-4	150.0	1.306E+02	1.256E+01
Pd-110(p,x)He-4	800.0	5.870E+02	3.182E+01
Pd-110(p,x)He-4	1200.0	8.834E+02	6.096E+01
Ag-107(p,x)H-1	62.0	9.686E+02	9.894E+01
Ag-107(p,x)H-1	90.0	1.346E+03	1.191E+02
Ag-107(p,x)H-1	1200.0	5.035E+03	7.553E+02
Ag-107(p,x)H-2	62.0	9.569E+01	1.435E+01
Ag-107(p,x)H-2	90.0	1.531E+02	2.296E+01
Ag-107(p,x)H-2	1200.0	8.384E+02	1.258E+02
Ag-107(p,x)H-3	62.0	1.767E+01	1.358E+00
Ag-107(p,x)H-3	90.0	3.003E+01	1.656E+00
Ag-107(p,x)H-3	150.0	1.529E+01	4.360E-01
Ag-107(p,x)H-3	660.0	1.059E+02	4.949E-01
Ag-107(p,x)H-3	1200.0	2.599E+02	3.898E+01
Ag-107(p,x)He-3	62.0	5.437E+00	8.414E-01
Ag-107(p,x)He-3	90.0	1.289E+01	1.692E+00
Ag-107(p,x)He-3	150.0	1.185E+01	1.535E+00
Ag-107(p,x)He-3	800.0	6.432E+01	3.334E+00
Ag-107(p,x)He-3	1200.0	8.976E+01	1.347E+01
Ag-107(p,x)He-4	62.0	1.504E+02	2.581E+01
Ag-107(p,x)He-4	90.0	2.043E+02	4.007E+01
Ag-107(p,x)He-4	150.0	2.133E+02	2.190E+01
Ag-107(p,x)He-4	800.0	7.244E+02	7.458E+01
Ag-107(p,x)He-4	1200.0	1.018E+03	1.528E+02
Ag-109(p,x)H-1	62.0	7.979E+02	6.702E+01
Ag-109(p,x)H-1	90.0	1.153E+03	8.871E+01
Ag-109(p,x)H-1	1200.0	4.754E+03	7.132E+02
Ag-109(p,x)H-2	62.0	9.070E+01	1.361E+01
Ag-109(p,x)H-2	90.0	1.451E+02	2.177E+01
Ag-109(p,x)H-2	1200.0	8.511E+02	1.277E+02
Ag-109(p,x)H-3	62.0	1.961E+01	1.766E+00
Ag-109(p,x)H-3	90.0	3.246E+01	2.313E+00
Ag-109(p,x)H-3	150.0	1.601E+01	3.733E-01
Ag-109(p,x)H-3	660.0	1.148E+02	5.695E+00
Ag-109(p,x)H-3	1200.0	2.875E+02	4.313E+01
Ag-109(p,x)He-3	62.0	4.815E+00	7.479E-01
Ag-109(p,x)He-3	90.0	1.125E+01	1.336E+00
Ag-109(p,x)He-3	150.0	1.035E+01	1.408E+00
Ag-109(p,x)He-3	800.0	5.970E+01	1.527E+00
Ag-109(p,x)He-3	1200.0	8.486E+01	1.273E+01
Ag-109(p,x)He-4	62.0	1.199E+02	2.754E+01
Ag-109(p,x)He-4	90.0	1.692E+02	2.815E+01
Ag-109(p,x)He-4	150.0	1.853E+02	2.794E+01
Ag-109(p,x)He-4	800.0	6.818E+02	4.893E+01
Ag-109(p,x)He-4	1200.0	9.883E+02	1.482E+02
Cd-106(p,x)H-1	62.0	1.500E+03	1.368E+02
Cd-106(p,x)H-1	90.0	1.902E+03	1.871E+02
Cd-106(p,x)H-1	1200.0	5.780E+03	5.448E+01
Cd-106(p,x)H-2	62.0	1.068E+02	1.602E+01
Cd-106(p,x)H-2	90.0	1.688E+02	2.533E+01
Cd-106(p,x)H-2	1200.0	8.400E+02	2.663E+01
Cd-106(p,x)H-3	62.0	1.444E+01	4.971E-01
Cd-106(p,x)H-3	90.0	2.666E+01	1.429E+00
Cd-106(p,x)H-3	150.0	1.355E+01	3.416E-01
Cd-106(p,x)H-3	660.0	9.050E+01	6.509E+00
Cd-106(p,x)H-3	1200.0	2.296E+02	1.055E+01
Cd-106(p,x)He-3	62.0	5.764E+00	2.140E-01
Cd-106(p,x)He-3	90.0	1.439E+01	4.523E-01
Cd-106(p,x)He-3	150.0	1.397E+01	3.795E-01
Cd-106(p,x)He-3	800.0	7.472E+01	3.040E+00
Cd-106(p,x)He-3	1200.0	1.000E+02	3.459E+00
Cd-106(p,x)He-4	62.0	1.916E+02	3.818E+01
Cd-106(p,x)He-4	90.0	2.585E+02	6.826E+01
Cd-106(p,x)He-4	150.0	2.641E+02	2.817E+01
Cd-106(p,x)He-4	800.0	7.945E+02	1.339E+02
Cd-106(p,x)He-4	1200.0	1.083E+03	7.925E+01
Cd-108(p,x)H-1	62.0	1.199E+03	9.614E+01
Cd-108(p,x)H-1	90.0	1.547E+03	1.481E+02
Cd-108(p,x)H-1	1200.0	5.390E+03	4.520E+01
Cd-108(p,x)H-2	62.0	1.035E+02	1.552E+01
Cd-108(p,x)H-2	90.0	1.625E+02	2.437E+01
Cd-108(p,x)H-2	1200.0	8.520E+02	1.629E+01
Cd-108(p,x)H-3	62.0	1.633E+01	6.702E-01
Cd-108(p,x)H-3	90.0	2.906E+01	1.780E+00
Cd-108(p,x)H-3	150.0	1.422E+01	4.272E-02
Cd-108(p,x)H-3	660.0	1.005E+02	3.557E+00
Cd-108(p,x)H-3	1200.0	2.526E+02	9.263E+00
Cd-108(p,x)He-3	62.0	5.061E+00	1.950E-01
Cd-108(p,x)He-3	90.0	1.245E+01	2.830E-01
Cd-108(p,x)He-3	150.0	1.202E+01	5.592E-01
Cd-108(p,x)He-3	800.0	6.916E+01	2.860E+00
Cd-108(p,x)He-3	1200.0	9.473E+01	2.512E+00
Cd-108(p,x)He-4	62.0	1.514E+02	2.112E+01
Cd-108(p,x)He-4	90.0	2.077E+02	5.164E+01
Cd-108(p,x)He-4	150.0	2.275E+02	2.641E+01
Cd-108(p,x)He-4	800.0	7.681E+02	9.961E+01
Cd-108(p,x)He-4	1200.0	1.072E+03	4.803E+01
Cd-110(p,x)H-1	62.0	1.016E+03	8.810E+01
Cd-110(p,x)H-1	90.0	1.320E+03	1.110E+02
Cd-110(p,x)H-1	1200.0	5.061E+03	2.586E+01
Cd-110(p,x)H-2	62.0	9.912E+01	1.487E+01
Cd-110(p,x)H-2	90.0	1.549E+02	2.324E+01
Cd-110(p,x)H-2	1200.0	8.604E+02	1.337E+01
Cd-110(p,x)H-3	62.0	1.855E+01	8.059E-01
Cd-110(p,x)H-3	90.0	3.163E+01	1.972E+00
Cd-110(p,x)H-3	150.0	1.494E+01	2.090E-01
Cd-110(p,x)H-3	660.0	1.111E+02	3.890E+00
Cd-110(p,x)H-3	1200.0	2.744E+02	6.425E+00
Cd-110(p,x)He-3	62.0	4.481E+00	1.972E-01
Cd-110(p,x)He-3	90.0	1.096E+01	2.206E-01
Cd-110(p,x)He-3	150.0	1.031E+01	7.713E-01
Cd-110(p,x)He-3	800.0	6.370E+01	1.750E+00
Cd-110(p,x)He-3	1200.0	8.858E+01	8.046E-01
Cd-110(p,x)He-4	62.0	1.215E+02	1.771E+01
Cd-110(p,x)He-4	90.0	1.663E+02	3.853E+01
Cd-110(p,x)He-4	150.0	1.894E+02	1.672E+01
Cd-110(p,x)He-4	800.0	7.294E+02	7.016E+01
Cd-110(p,x)He-4	1200.0	1.043E+03	3.454E+01
Cd-111(p,x)H-1	62.0	9.415E+02	8.768E+01
Cd-111(p,x)H-1	90.0	1.237E+03	9.706E+01
Cd-111(p,x)H-1	1200.0	4.905E+03	1.797E+01
Cd-111(p,x)H-2	62.0	1.055E+02	1.583E+01
Cd-111(p,x)H-2	90.0	1.592E+02	2.388E+01
Cd-111(p,x)H-2	1200.0	8.637E+02	3.295E+00
Cd-111(p,x)H-3	62.0	2.184E+01	3.786E+00
Cd-111(p,x)H-3	90.0	3.196E+01	6.809E-01
Cd-111(p,x)H-3	150.0	1.537E+01	5.565E-01
Cd-111(p,x)H-3	660.0	1.137E+02	5.014E+00
Cd-111(p,x)H-3	1200.0	2.869E+02	3.083E+00
Cd-111(p,x)He-3	62.0	5.079E+00	4.112E-01
Cd-111(p,x)He-3	90.0	1.163E+01	6.449E-01
Cd-111(p,x)He-3	150.0	1.050E+01	5.492E-01
Cd-111(p,x)He-3	800.0	6.056E+01	1.905E+00
Cd-111(p,x)He-3	1200.0	8.450E+01	7.424E-01
Cd-111(p,x)He-4	62.0	1.143E+02	4.669E+00
Cd-111(p,x)He-4	90.0	1.487E+02	3.064E+01
Cd-111(p,x)He-4	150.0	1.706E+02	1.538E+01
Cd-111(p,x)He-4	800.0	7.039E+02	5.787E+01
Cd-111(p,x)He-4	1200.0	1.018E+03	1.386E+01
Cd-112(p,x)H-1	62.0	8.872E+02	9.149E+01
Cd-112(p,x)H-1	90.0	1.191E+03	1.041E+02
Cd-112(p,x)H-1	1200.0	4.773E+03	1.573E+01
Cd-112(p,x)H-2	62.0	9.595E+01	1.439E+01
Cd-112(p,x)H-2	90.0	1.491E+02	2.237E+01
Cd-112(p,x)H-2	1200.0	8.657E+02	6.360E+00
Cd-112(p,x)H-3	62.0	2.087E+01	1.497E+00
Cd-112(p,x)H-3	90.0	3.374E+01	2.385E+00
Cd-112(p,x)H-3	150.0	1.565E+01	1.857E-01
Cd-112(p,x)H-3	660.0	1.188E+02	7.735E+00
Cd-112(p,x)H-3	1200.0	3.008E+02	3.284E+00
Cd-112(p,x)He-3	62.0	3.993E+00	2.305E-01
Cd-112(p,x)He-3	90.0	9.777E+00	4.181E-01
Cd-112(p,x)He-3	150.0	9.023E+00	7.462E-01
Cd-112(p,x)He-3	800.0	5.875E+01	9.120E-01
Cd-112(p,x)He-3	1200.0	8.242E+01	5.003E-01
Cd-112(p,x)He-4	62.0	9.994E+01	7.528E+00
Cd-112(p,x)He-4	90.0	1.328E+02	2.322E+01
Cd-112(p,x)He-4	150.0	1.463E+02	1.581E+01
Cd-112(p,x)He-4	800.0	6.802E+02	5.190E+01
Cd-112(p,x)He-4	1200.0	1.002E+03	1.115E+01
Cd-113(p,x)H-1	62.0	8.161E+02	7.019E+01
Cd-113(p,x)H-1	90.0	1.125E+03	8.239E+01
Cd-113(p,x)H-1	1200.0	4.655E+03	6.040E+01
Cd-113(p,x)H-2	62.0	1.024E+02	1.537E+01
Cd-113(p,x)H-2	90.0	1.538E+02	2.307E+01
Cd-113(p,x)H-2	1200.0	8.749E+02	2.147E+01
Cd-113(p,x)H-3	62.0	2.275E+01	2.838E+00
Cd-113(p,x)H-3	90.0	3.423E+01	3.249E-01
Cd-113(p,x)H-3	150.0	1.620E+01	7.053E-01
Cd-113(p,x)H-3	660.0	1.233E+02	1.208E+01

Cd-113(p,x)H-3	1200.0	3.123E+02	1.337E+01
Cd-113(p,x)He-3	62.0	4.581E+00	4.110E-01
Cd-113(p,x)He-3	90.0	1.040E+01	5.099E-01
Cd-113(p,x)He-3	150.0	9.460E+00	5.399E-01
Cd-113(p,x)He-3	800.0	5.656E+01	1.003E+00
Cd-113(p,x)He-3	1200.0	8.083E+01	2.056E+00
Cd-113(p,x)He-4	62.0	1.079E+02	2.286E+01
Cd-113(p,x)He-4	90.0	1.336E+02	1.397E+01
Cd-113(p,x)He-4	150.0	1.334E+02	1.463E+01
Cd-113(p,x)He-4	800.0	6.546E+02	4.589E+01
Cd-113(p,x)He-4	1200.0	9.753E+02	3.623E+01
Cd-114(p,x)H-1	62.0	7.920E+02	6.704E+01
Cd-114(p,x)H-1	90.0	1.084E+03	7.435E+01
Cd-114(p,x)H-1	1200.0	4.542E+03	8.308E+01
Cd-114(p,x)H-2	62.0	9.247E+01	1.387E+01
Cd-114(p,x)H-2	90.0	1.438E+02	2.158E+01
Cd-114(p,x)H-2	1200.0	8.738E+02	3.017E+01
Cd-114(p,x)H-3	62.0	2.481E+01	3.924E+00
Cd-114(p,x)H-3	90.0	3.579E+01	2.580E+00
Cd-114(p,x)H-3	150.0	1.638E+01	5.206E-01
Cd-114(p,x)H-3	660.0	1.267E+02	1.288E+01
Cd-114(p,x)H-3	1200.0	3.221E+02	1.957E+01
Cd-114(p,x)He-3	62.0	3.563E+00	1.465E-01
Cd-114(p,x)He-3	90.0	8.574E+00	1.345E-01
Cd-114(p,x)He-3	150.0	8.237E+00	8.494E-01
Cd-114(p,x)He-3	800.0	5.479E+01	2.297E-01
Cd-114(p,x)He-3	1200.0	7.811E+01	2.227E+00
Cd-114(p,x)He-4	62.0	1.070E+02	3.618E+01
Cd-114(p,x)He-4	90.0	1.323E+02	1.519E+01
Cd-114(p,x)He-4	150.0	1.310E+02	1.207E+01
Cd-114(p,x)He-4	800.0	6.310E+02	4.595E+01
Cd-114(p,x)He-4	1200.0	9.459E+02	5.397E+01
Cd-116(p,x)H-1	62.0	7.475E+02	6.334E+01
Cd-116(p,x)H-1	90.0	1.032E+03	6.338E+01
Cd-116(p,x)H-1	1200.0	4.340E+03	1.548E+02
Cd-116(p,x)H-2	62.0	8.981E+01	1.347E+01
Cd-116(p,x)H-2	90.0	1.389E+02	2.083E+01
Cd-116(p,x)H-2	1200.0	8.896E+02	5.650E+01
Cd-116(p,x)H-3	62.0	2.467E+01	2.513E+00
Cd-116(p,x)H-3	90.0	3.819E+01	2.802E+00
Cd-116(p,x)H-3	150.0	1.727E+01	6.707E-01
Cd-116(p,x)H-3	660.0	1.336E+02	1.717E+01
Cd-116(p,x)H-3	1200.0	3.450E+02	3.159E+01
Cd-116(p,x)He-3	62.0	3.180E+00	7.048E-02
Cd-116(p,x)He-3	90.0	7.536E+00	2.003E-01
Cd-116(p,x)He-3	150.0	7.359E+00	7.185E-01
Cd-116(p,x)He-3	800.0	5.171E+01	1.621E+00
Cd-116(p,x)He-3	1200.0	7.388E+01	4.778E+00
Cd-116(p,x)He-4	62.0	7.113E+01	2.291E+01
Cd-116(p,x)He-4	90.0	1.229E+02	4.868E+01
Cd-116(p,x)He-4	150.0	1.537E+02	7.998E+01
Cd-116(p,x)He-4	800.0	5.786E+02	4.996E+01
Cd-116(p,x)He-4	1200.0	8.979E+02	8.183E+01
In-113(p,x)H-1	62.0	9.225E+02	8.162E+01
In-113(p,x)H-1	90.0	1.295E+03	1.268E+02
In-113(p,x)H-1	1200.0	5.091E+03	5.490E+01
In-113(p,x)H-2	62.0	9.225E+01	1.384E+01
In-113(p,x)H-2	90.0	1.484E+02	2.226E+01
In-113(p,x)H-2	1200.0	8.908E+02	7.779E+00
In-113(p,x)H-3	62.0	1.893E+01	2.349E+00
In-113(p,x)H-3	90.0	3.088E+01	2.937E+00
In-113(p,x)H-3	150.0	1.623E+01	1.173E+00
In-113(p,x)H-3	660.0	1.151E+02	6.498E+00
In-113(p,x)H-3	1200.0	2.927E+02	2.860E+00
In-113(p,x)He-3	62.0	5.173E+00	9.208E-01
In-113(p,x)He-3	90.0	1.176E+01	1.466E+00
In-113(p,x)He-3	150.0	1.100E+01	1.557E+00
In-113(p,x)He-3	800.0	6.270E+01	4.377E-01
In-113(p,x)He-3	1200.0	8.848E+01	1.327E+01
In-113(p,x)He-4	62.0	1.821E+02	4.721E+01
In-113(p,x)He-4	90.0	2.257E+02	2.632E+01
In-113(p,x)He-4	150.0	1.974E+02	2.058E+01
In-113(p,x)He-4	800.0	7.355E+02	6.908E+01
In-113(p,x)He-4	1200.0	1.060E+03	2.944E+01
In-115(p,x)H-1	62.0	7.867E+02	6.875E+01
In-115(p,x)H-1	90.0	1.132E+03	8.789E+01
In-115(p,x)H-1	1200.0	4.837E+03	9.567E+01
In-115(p,x)H-2	62.0	8.682E+01	1.302E+01
In-115(p,x)H-2	90.0	1.404E+02	2.106E+01
In-115(p,x)H-2	1200.0	8.983E+02	3.342E+01
In-115(p,x)H-3	62.0	2.143E+01	4.056E+00
In-115(p,x)H-3	90.0	3.287E+01	3.918E+00
In-115(p,x)H-3	150.0	1.657E+01	8.665E-01
In-115(p,x)H-3	660.0	1.236E+02	1.125E+01
In-115(p,x)H-3	1200.0	3.150E+02	1.276E+01
In-115(p,x)He-3	62.0	4.600E+00	8.639E-01
In-115(p,x)He-3	90.0	1.038E+01	1.308E+00
In-115(p,x)He-3	150.0	9.697E+00	1.443E+00
In-115(p,x)He-3	800.0	5.898E+01	6.711E-01
In-115(p,x)He-3	1200.0	8.241E+01	1.272E+00
In-115(p,x)He-4	62.0	1.347E+02	4.608E+01
In-115(p,x)He-4	90.0	1.863E+02	3.204E+01
In-115(p,x)He-4	150.0	1.829E+02	3.626E+01
In-115(p,x)He-4	800.0	6.817E+02	5.654E+01
In-115(p,x)He-4	1200.0	1.009E+03	3.482E+01
Sn-112(p,x)H-1	62.0	1.400E+03	7.895E+01
Sn-112(p,x)H-1	90.0	1.752E+03	1.414E+02
Sn-112(p,x)H-1	1200.0	5.804E+03	9.333E+01
Sn-112(p,x)H-2	62.0	1.087E+02	1.631E+01
Sn-112(p,x)H-2	90.0	1.694E+02	2.541E+01
Sn-112(p,x)H-2	1200.0	9.010E+02	4.962E+00
Sn-112(p,x)H-3	62.0	1.581E+01	3.957E-01
Sn-112(p,x)H-3	90.0	2.837E+01	1.110E+00
Sn-112(p,x)H-3	150.0	1.401E+01	2.101E+00
Sn-112(p,x)H-3	660.0	1.038E+02	5.081E-01
Sn-112(p,x)H-3	1200.0	2.637E+02	6.256E+00
Sn-112(p,x)He-3	62.0	5.420E+00	1.067E-01
Sn-112(p,x)He-3	90.0	1.310E+01	1.950E-01
Sn-112(p,x)He-3	150.0	1.334E+01	1.085E+00
Sn-112(p,x)He-3	800.0	7.338E+01	1.008E+00
Sn-112(p,x)He-3	1200.0	1.008E+02	9.211E-01
Sn-112(p,x)He-4	62.0	1.987E+02	2.489E+01
Sn-112(p,x)He-4	90.0	2.783E+02	3.322E+01
Sn-112(p,x)He-4	150.0	2.912E+02	2.796E+01
Sn-112(p,x)He-4	800.0	8.305E+02	1.208E+02
Sn-112(p,x)He-4	1200.0	1.160E+03	8.529E+01
Sn-114(p,x)H-1	62.0	1.188E+03	4.055E+01
Sn-114(p,x)H-1	90.0	1.469E+03	9.076E+01
Sn-114(p,x)H-1	1200.0	5.457E+03	9.699E+01
Sn-114(p,x)H-2	62.0	1.063E+02	1.594E+01
Sn-114(p,x)H-2	90.0	1.630E+02	2.445E+01
Sn-114(p,x)H-2	1200.0	9.125E+02	1.189E+01
Sn-114(p,x)H-3	62.0	1.781E+01	4.983E-01
Sn-114(p,x)H-3	90.0	3.074E+01	1.595E+00
Sn-114(p,x)H-3	150.0	1.474E+01	2.211E+00
Sn-114(p,x)H-3	660.0	1.133E+02	6.772E+00
Sn-114(p,x)H-3	1200.0	2.875E+02	3.908E+00
Sn-114(p,x)He-3	62.0	4.805E+00	4.834E-02
Sn-114(p,x)He-3	90.0	1.134E+01	2.001E-01
Sn-114(p,x)He-3	150.0	1.133E+01	7.827E-01
Sn-114(p,x)He-3	800.0	6.882E+01	2.719E-01
Sn-114(p,x)He-3	1200.0	9.519E+01	1.550E+00
Sn-114(p,x)He-4	62.0	1.550E+02	1.750E+01
Sn-114(p,x)He-4	90.0	2.306E+02	2.872E+01
Sn-114(p,x)He-4	150.0	2.646E+02	5.228E+01
Sn-114(p,x)He-4	800.0	7.908E+02	9.818E+01
Sn-114(p,x)He-4	1200.0	1.125E+03	5.336E+01
Sn-115(p,x)H-1	62.0	1.096E+03	3.933E+01
Sn-115(p,x)H-1	90.0	1.359E+03	6.247E+01
Sn-115(p,x)H-1	1200.0	5.301E+03	1.095E+02
Sn-115(p,x)H-2	62.0	1.129E+02	1.694E+01
Sn-115(p,x)H-2	90.0	1.684E+02	2.526E+01
Sn-115(p,x)H-2	1200.0	9.214E+02	2.230E+01
Sn-115(p,x)H-3	62.0	1.936E+01	1.969E+00
Sn-115(p,x)H-3	90.0	3.092E+01	1.843E+00
Sn-115(p,x)H-3	150.0	1.509E+01	2.263E+00
Sn-115(p,x)H-3	660.0	1.173E+02	8.451E+00
Sn-115(p,x)H-3	1200.0	2.996E+02	1.073E+01
Sn-115(p,x)He-3	62.0	5.376E+00	4.205E-01
Sn-115(p,x)He-3	90.0	1.198E+01	7.442E-01
Sn-115(p,x)He-3	150.0	1.125E+01	3.046E-01
Sn-115(p,x)He-3	800.0	6.539E+01	4.638E-01
Sn-115(p,x)He-3	1200.0	9.206E+01	2.170E+00
Sn-115(p,x)He-4	62.0	1.297E+02	2.726E+01
Sn-115(p,x)He-4	90.0	1.903E+02	3.264E+01
Sn-115(p,x)He-4	150.0	2.398E+02	5.166E+01
Sn-115(p,x)He-4	800.0	7.648E+02	8.561E+01
Sn-115(p,x)He-4	1200.0	1.100E+03	4.177E+01
Sn-116(p,x)H-1	62.0	1.031E+03	2.635E+01
Sn-116(p,x)H-1	90.0	1.286E+03	5.468E+01

Sn-116(p,x)H-1	1200.0	5.137E+03	1.201E+02
Sn-116(p,x)H-2	62.0	1.060E+02	1.590E+01
Sn-116(p,x)H-2	90.0	1.592E+02	2.388E+01
Sn-116(p,x)H-2	1200.0	9.208E+02	3.104E+01
Sn-116(p,x)H-3	62.0	1.993E+01	6.072E-01
Sn-116(p,x)H-3	90.0	3.304E+01	1.519E+00
Sn-116(p,x)H-3	150.0	1.548E+01	2.322E+00
Sn-116(p,x)H-3	660.0	1.213E+02	1.128E+01
Sn-116(p,x)H-3	1200.0	3.101E+02	1.647E+01
Sn-116(p,x)He-3	62.0	4.244E+00	1.620E-02
Sn-116(p,x)He-3	90.0	9.935E+00	3.426E-01
Sn-116(p,x)He-3	150.0	9.808E+00	6.676E-01
Sn-116(p,x)He-3	800.0	6.303E+01	1.418E-01
Sn-116(p,x)He-3	1200.0	8.873E+01	2.170E+00
Sn-116(p,x)He-4	62.0	1.175E+02	1.887E+01
Sn-116(p,x)He-4	90.0	1.694E+02	1.827E+01
Sn-116(p,x)He-4	150.0	2.126E+02	4.447E+01
Sn-116(p,x)He-4	800.0	7.367E+02	7.457E+01
Sn-116(p,x)He-4	1200.0	1.079E+03	3.904E+01
Sn-117(p,x)H-1	62.0	9.653E+02	3.560E+01
Sn-117(p,x)H-1	90.0	1.226E+03	4.276E+01
Sn-117(p,x)H-1	1200.0	5.006E+03	1.245E+02
Sn-117(p,x)H-2	62.0	1.123E+02	1.685E+01
Sn-117(p,x)H-2	90.0	1.654E+02	2.480E+01
Sn-117(p,x)H-2	1200.0	9.213E+02	3.804E+01
Sn-117(p,x)H-3	62.0	2.219E+01	2.571E+00
Sn-117(p,x)H-3	90.0	3.386E+01	2.019E+00
Sn-117(p,x)H-3	150.0	1.604E+01	2.406E+00
Sn-117(p,x)H-3	660.0	1.246E+02	1.190E+01
Sn-117(p,x)H-3	1200.0	3.200E+02	1.790E+01
Sn-117(p,x)He-3	62.0	4.885E+00	4.102E-01
Sn-117(p,x)He-3	90.0	1.070E+01	7.738E-01
Sn-117(p,x)He-3	150.0	1.007E+01	3.469E-01
Sn-117(p,x)He-3	800.0	6.182E+01	2.455E+00
Sn-117(p,x)He-3	1200.0	8.541E+01	2.486E+00
Sn-117(p,x)He-4	62.0	9.311E+01	1.586E+01
Sn-117(p,x)He-4	90.0	1.399E+02	2.670E+01
Sn-117(p,x)He-4	150.0	1.892E+02	3.689E+01
Sn-117(p,x)He-4	800.0	7.126E+02	6.632E+01
Sn-117(p,x)He-4	1200.0	1.054E+03	4.273E+01
Sn-118(p,x)H-1	62.0	8.934E+02	2.413E+01
Sn-118(p,x)H-1	90.0	1.183E+03	4.723E+01
Sn-118(p,x)H-1	1200.0	4.877E+03	1.513E+02
Sn-118(p,x)H-2	62.0	1.022E+02	1.533E+01
Sn-118(p,x)H-2	90.0	1.543E+02	2.315E+01
Sn-118(p,x)H-2	1200.0	9.222E+02	5.028E+01
Sn-118(p,x)H-3	62.0	2.205E+01	6.975E-01
Sn-118(p,x)H-3	90.0	3.554E+01	9.675E-01
Sn-118(p,x)H-3	150.0	1.634E+01	2.451E+00
Sn-118(p,x)H-3	660.0	1.285E+02	1.437E+01
Sn-118(p,x)H-3	1200.0	3.297E+02	2.201E+01
Sn-118(p,x)He-3	62.0	3.786E+00	3.381E-02
Sn-118(p,x)He-3	90.0	8.842E+00	4.256E-01
Sn-118(p,x)He-3	150.0	8.689E+00	6.655E-01
Sn-118(p,x)He-3	800.0	5.969E+01	1.900E+00
Sn-118(p,x)He-3	1200.0	8.228E+01	2.684E+00
Sn-118(p,x)He-4	62.0	8.164E+01	1.016E+01
Sn-118(p,x)He-4	90.0	1.248E+02	1.735E+01
Sn-118(p,x)He-4	150.0	1.620E+02	2.744E+01
Sn-118(p,x)He-4	800.0	6.839E+02	6.221E+01
Sn-118(p,x)He-4	1200.0	1.024E+03	4.675E+01
Sn-119(p,x)H-1	62.0	8.375E+02	2.198E+01
Sn-119(p,x)H-1	90.0	1.137E+03	3.723E+01
Sn-119(p,x)H-1	1200.0	4.752E+03	1.541E+02
Sn-119(p,x)H-2	62.0	1.082E+02	1.624E+01
Sn-119(p,x)H-2	90.0	1.596E+02	2.393E+01
Sn-119(p,x)H-2	1200.0	9.202E+02	5.292E+01
Sn-119(p,x)H-3	62.0	2.357E+01	2.348E+00
Sn-119(p,x)H-3	90.0	3.592E+01	2.752E+00
Sn-119(p,x)H-3	150.0	1.658E+01	2.488E+00
Sn-119(p,x)H-3	660.0	1.311E+02	1.286E+01
Sn-119(p,x)H-3	1200.0	3.387E+02	2.657E+01
Sn-119(p,x)He-3	62.0	4.445E+00	3.879E-01
Sn-119(p,x)He-3	90.0	9.608E+00	7.946E-01
Sn-119(p,x)He-3	150.0	9.008E+00	3.303E-01
Sn-119(p,x)He-3	800.0	5.699E+01	1.784E+00
Sn-119(p,x)He-3	1200.0	7.883E+01	3.921E+00
Sn-119(p,x)He-4	62.0	7.269E+01	5.738E+00
Sn-119(p,x)He-4	90.0	1.130E+02	2.158E+01
Sn-119(p,x)He-4	150.0	1.452E+02	3.110E+01
Sn-119(p,x)He-4	800.0	6.512E+02	5.140E+01
Sn-119(p,x)He-4	1200.0	9.920E+02	5.546E+01
Sn-120(p,x)H-1	62.0	8.110E+02	1.217E+02
Sn-120(p,x)H-1	90.0	1.122E+03	4.904E+01
Sn-120(p,x)H-1	1200.0	4.623E+03	1.645E+02
Sn-120(p,x)H-2	62.0	9.511E+01	1.427E+01
Sn-120(p,x)H-2	90.0	1.440E+02	2.160E+01
Sn-120(p,x)H-2	1200.0	9.183E+02	5.774E+01
Sn-120(p,x)H-3	62.0	2.363E+01	3.545E+00
Sn-120(p,x)H-3	90.0	3.782E+01	2.967E-01
Sn-120(p,x)H-3	150.0	1.701E+01	2.552E+00
Sn-120(p,x)H-3	660.0	1.346E+02	1.560E+01
Sn-120(p,x)H-3	1200.0	3.492E+02	2.614E+01
Sn-120(p,x)He-3	62.0	3.350E+00	5.025E-01
Sn-120(p,x)He-3	90.0	7.735E+00	4.121E-01
Sn-120(p,x)He-3	150.0	7.677E+00	4.856E-01
Sn-120(p,x)He-3	800.0	5.480E+01	1.848E+00
Sn-120(p,x)He-3	1200.0	7.578E+01	4.006E+00
Sn-120(p,x)He-4	62.0	6.403E+01	9.604E+00
Sn-120(p,x)He-4	90.0	1.062E+02	1.369E+01
Sn-120(p,x)He-4	150.0	1.481E+02	5.434E+01
Sn-120(p,x)He-4	800.0	6.194E+02	4.917E+01
Sn-120(p,x)He-4	1200.0	9.568E+02	6.522E+01
Sn-122(p,x)H-1	62.0	7.431E+02	6.989E+00
Sn-122(p,x)H-1	90.0	1.038E+03	3.077E+01
Sn-122(p,x)H-1	1200.0	4.409E+03	2.065E+02
Sn-122(p,x)H-2	62.0	9.420E+01	1.413E+01
Sn-122(p,x)H-2	90.0	1.433E+02	2.149E+01
Sn-122(p,x)H-2	1200.0	9.100E+02	6.383E+01
Sn-122(p,x)H-3	62.0	2.448E+01	8.232E-01
Sn-122(p,x)H-3	90.0	3.923E+01	7.146E-01
Sn-122(p,x)H-3	150.0	1.789E+01	2.683E+00
Sn-122(p,x)H-3	660.0	1.377E+02	1.478E+01
Sn-122(p,x)H-3	1200.0	3.652E+02	3.233E+01
Sn-122(p,x)He-3	62.0	2.970E+00	5.492E-02
Sn-122(p,x)He-3	90.0	6.912E+00	4.745E-01
Sn-122(p,x)He-3	150.0	6.885E+00	3.337E-01
Sn-122(p,x)He-3	800.0	5.030E+01	1.668E+00
Sn-122(p,x)He-3	1200.0	7.074E+01	3.912E+00
Sn-122(p,x)He-4	62.0	4.984E+01	6.946E+00
Sn-122(p,x)He-4	90.0	8.837E+01	1.976E+01
Sn-122(p,x)He-4	150.0	1.272E+02	5.835E+01
Sn-122(p,x)He-4	800.0	5.604E+02	3.800E+01
Sn-122(p,x)He-4	1200.0	8.895E+02	8.521E+01
Sn-124(p,x)H-1	62.0	7.167E+02	1.073E+01
Sn-124(p,x)H-1	90.0	1.007E+03	3.040E+01
Sn-124(p,x)H-1	1200.0	4.214E+03	2.561E+02
Sn-124(p,x)H-2	62.0	9.071E+01	1.361E+01
Sn-124(p,x)H-2	90.0	1.385E+02	2.078E+01
Sn-124(p,x)H-2	1200.0	8.965E+02	7.008E+01
Sn-124(p,x)H-3	62.0	2.595E+01	1.286E+00
Sn-124(p,x)H-3	90.0	4.036E+01	9.060E-01
Sn-124(p,x)H-3	150.0	1.849E+01	2.774E+00
Sn-124(p,x)H-3	660.0	1.425E+02	1.516E+01
Sn-124(p,x)H-3	1200.0	3.789E+02	3.320E+01
Sn-124(p,x)He-3	62.0	2.619E+00	1.019E-01
Sn-124(p,x)He-3	90.0	6.155E+00	5.254E-01
Sn-124(p,x)He-3	150.0	6.104E+00	3.954E-01
Sn-124(p,x)He-3	800.0	4.696E+01	2.199E+00
Sn-124(p,x)He-3	1200.0	6.627E+01	4.903E+00
Sn-124(p,x)He-4	62.0	3.791E+01	3.615E+00
Sn-124(p,x)He-4	90.0	6.527E+01	1.219E+01
Sn-124(p,x)He-4	150.0	9.977E+01	3.747E+01
Sn-124(p,x)He-4	800.0	5.030E+02	3.855E+01
Sn-124(p,x)He-4	1200.0	8.273E+02	1.035E+02
Sb-121(p,x)H-1	62.0	8.409E+02	4.870E+01
Sb-121(p,x)H-1	90.0	1.176E+03	4.193E+01
Sb-121(p,x)H-1	1200.0	4.904E+03	1.624E+02
Sb-121(p,x)H-2	62.0	9.348E+01	1.402E+01
Sb-121(p,x)H-2	90.0	1.508E+02	2.262E+01
Sb-121(p,x)H-2	1200.0	9.422E+02	5.952E+01
Sb-121(p,x)H-3	62.0	2.207E+01	2.768E+00
Sb-121(p,x)H-3	90.0	3.498E+01	5.361E-01
Sb-121(p,x)H-3	150.0	1.709E+01	1.506E+00
Sb-121(p,x)H-3	660.0	1.314E+02	1.488E+01
Sb-121(p,x)H-3	1200.0	3.430E+02	2.577E+01
Sb-121(p,x)He-3	62.0	4.963E+00	6.249E-01
Sb-121(p,x)He-3	90.0	1.026E+01	5.748E-01
Sb-121(p,x)He-3	150.0	9.539E+00	5.907E-01
Sb-121(p,x)He-3	800.0	5.871E+01	1.522E+00

Sb-121(p,x)He-3	1200.0	8.167E+01	3.768E+00
Sb-121(p,x)He-4	62.0	1.069E+02	3.774E+01
Sb-121(p,x)He-4	90.0	1.513E+02	5.558E+01
Sb-121(p,x)He-4	150.0	1.588E+02	2.060E+01
Sb-121(p,x)He-4	800.0	6.756E+02	5.171E+01
Sb-121(p,x)He-4	1200.0	1.026E+03	5.617E+01
Sb-123(p,x)H-1	62.0	7.586E+02	4.126E+01
Sb-123(p,x)H-1	90.0	1.078E+03	3.165E+01
Sb-123(p,x)H-1	1200.0	4.652E+03	1.806E+02
Sb-123(p,x)H-2	62.0	8.883E+01	1.332E+01
Sb-123(p,x)H-2	90.0	1.433E+02	2.149E+01
Sb-123(p,x)H-2	1200.0	9.312E+02	5.914E+01
Sb-123(p,x)H-3	62.0	2.302E+01	2.989E+00
Sb-123(p,x)H-3	90.0	3.607E+01	8.389E-01
Sb-123(p,x)H-3	150.0	1.730E+01	1.800E+00
Sb-123(p,x)H-3	660.0	1.369E+02	1.625E+01
Sb-123(p,x)H-3	1200.0	3.582E+02	2.779E+01
Sb-123(p,x)He-3	62.0	4.316E+00	5.337E-01
Sb-123(p,x)He-3	90.0	8.977E+00	5.073E-01
Sb-123(p,x)He-3	150.0	8.430E+00	5.389E-01
Sb-123(p,x)He-3	800.0	5.392E+01	1.208E+00
Sb-123(p,x)He-3	1200.0	7.604E+01	3.756E+00
Sb-123(p,x)He-4	62.0	7.285E+01	2.573E+01
Sb-123(p,x)He-4	90.0	1.094E+02	3.991E+01
Sb-123(p,x)He-4	150.0	1.306E+02	1.346E+01
Sb-123(p,x)He-4	800.0	6.111E+02	4.004E+01
Sb-123(p,x)He-4	1200.0	9.565E+02	6.104E+01
Te-120(p,x)H-1	62.0	1.219E+03	3.805E+01
Te-120(p,x)H-1	90.0	1.523E+03	6.658E+01
Te-120(p,x)H-1	1200.0	5.527E+03	1.936E+02
Te-120(p,x)H-2	62.0	1.051E+02	1.576E+01
Te-120(p,x)H-2	90.0	1.662E+02	2.493E+01
Te-120(p,x)H-2	1200.0	9.684E+02	4.543E+01
Te-120(p,x)H-3	62.0	1.894E+01	8.117E-01
Te-120(p,x)H-3	90.0	3.230E+01	8.971E-01
Te-120(p,x)H-3	150.0	1.555E+01	1.303E+00
Te-120(p,x)H-3	660.0	1.244E+02	1.294E+01
Te-120(p,x)H-3	1200.0	3.191E+02	1.977E+01
Te-120(p,x)He-3	62.0	5.139E+00	7.921E-02
Te-120(p,x)He-3	90.0	1.125E+01	7.760E-01
Te-120(p,x)He-3	150.0	1.108E+01	3.983E-01
Te-120(p,x)He-3	800.0	7.035E+01	3.684E+00
Te-120(p,x)He-3	1200.0	9.440E+01	2.885E+00
Te-120(p,x)He-4	62.0	1.743E+02	6.374E+01
Te-120(p,x)He-4	90.0	2.447E+02	1.182E+02
Te-120(p,x)He-4	150.0	2.506E+02	7.920E+01
Te-120(p,x)He-4	800.0	8.078E+02	1.036E+02
Te-120(p,x)He-4	1200.0	1.162E+03	7.537E+01
Te-122(p,x)H-1	62.0	1.016E+03	1.268E+01
Te-122(p,x)H-1	90.0	1.307E+03	4.695E+01
Te-122(p,x)H-1	1200.0	5.209E+03	1.789E+02
Te-122(p,x)H-2	62.0	9.980E+01	1.497E+01
Te-122(p,x)H-2	90.0	1.577E+02	2.365E+01
Te-122(p,x)H-2	1200.0	9.690E+02	5.723E+01
Te-122(p,x)H-3	62.0	2.012E+01	1.030E+00
Te-122(p,x)H-3	90.0	3.387E+01	1.200E+00
Te-122(p,x)H-3	150.0	1.604E+01	1.852E+00
Te-122(p,x)H-3	660.0	1.301E+02	1.407E+01
Te-122(p,x)H-3	1200.0	3.366E+02	2.631E+01
Te-122(p,x)He-3	62.0	4.415E+00	1.890E-02
Te-122(p,x)He-3	90.0	9.778E+00	5.743E-01
Te-122(p,x)He-3	150.0	9.639E+00	2.444E-01
Te-122(p,x)He-3	800.0	6.471E+01	1.978E+00
Te-122(p,x)He-3	1200.0	8.860E+01	5.125E+00
Te-122(p,x)He-4	62.0	1.220E+02	3.899E+01
Te-122(p,x)He-4	90.0	1.743E+02	8.556E+01
Te-122(p,x)He-4	150.0	1.915E+02	6.633E+01
Te-122(p,x)He-4	800.0	7.427E+02	8.350E+01
Te-122(p,x)He-4	1200.0	1.098E+03	6.776E+01
Te-123(p,x)H-1	62.0	9.255E+02	2.160E+01
Te-123(p,x)H-1	90.0	1.231E+03	3.370E+01
Te-123(p,x)H-1	1200.0	5.057E+03	1.698E+02
Te-123(p,x)H-2	62.0	1.073E+02	1.610E+01
Te-123(p,x)H-2	90.0	1.637E+02	2.456E+01
Te-123(p,x)H-2	1200.0	9.607E+02	5.507E+01
Te-123(p,x)H-3	62.0	2.148E+01	2.184E+00
Te-123(p,x)H-3	90.0	3.418E+01	1.535E+00
Te-123(p,x)H-3	150.0	1.631E+01	1.868E+00
Te-123(p,x)H-3	660.0	1.342E+02	1.647E+01
Te-123(p,x)H-3	1200.0	3.472E+02	2.885E+01
Te-123(p,x)He-3	62.0	5.170E+00	4.498E-01
Te-123(p,x)He-3	90.0	1.074E+01	1.041E+00
Te-123(p,x)He-3	150.0	9.845E+00	4.092E-01
Te-123(p,x)He-3	800.0	6.051E+01	1.436E+00
Te-123(p,x)He-3	1200.0	8.434E+01	3.274E+00
Te-123(p,x)He-4	62.0	1.010E+02	3.171E+01
Te-123(p,x)He-4	90.0	1.467E+02	7.670E+01
Te-123(p,x)He-4	150.0	1.627E+02	6.140E+01
Te-123(p,x)He-4	800.0	7.098E+02	6.712E+01
Te-123(p,x)He-4	1200.0	1.065E+03	6.353E+01
Te-124(p,x)H-1	62.0	8.568E+02	7.678E+00
Te-124(p,x)H-1	90.0	1.181E+03	4.436E+01
Te-124(p,x)H-1	1200.0	4.932E+03	1.779E+02
Te-124(p,x)H-2	62.0	9.586E+01	1.438E+01
Te-124(p,x)H-2	90.0	1.512E+02	2.269E+01
Te-124(p,x)H-2	1200.0	9.573E+02	5.920E+01
Te-124(p,x)H-3	62.0	2.134E+01	1.116E+00
Te-124(p,x)H-3	90.0	3.546E+01	1.279E+00
Te-124(p,x)H-3	150.0	1.637E+01	2.130E+00
Te-124(p,x)H-3	660.0	1.373E+02	1.733E+01
Te-124(p,x)H-3	1200.0	3.520E+02	2.877E+01
Te-124(p,x)He-3	62.0	3.915E+00	5.620E-02
Te-124(p,x)He-3	90.0	8.696E+00	6.151E-01
Te-124(p,x)He-3	150.0	8.517E+00	2.211E-01
Te-124(p,x)He-3	800.0	5.875E+01	1.390E+00
Te-124(p,x)He-3	1200.0	8.084E+01	3.232E+00
Te-124(p,x)He-4	62.0	8.030E+01	2.082E+01
Te-124(p,x)He-4	90.0	1.226E+02	5.331E+01
Te-124(p,x)He-4	150.0	1.412E+02	4.866E+01
Te-124(p,x)He-4	800.0	6.741E+02	5.834E+01
Te-124(p,x)He-4	1200.0	1.035E+03	6.453E+01
Te-125(p,x)H-1	62.0	8.190E+02	2.647E+01
Te-125(p,x)H-1	90.0	1.143E+03	3.950E+01
Te-125(p,x)H-1	1200.0	4.809E+03	1.884E+02
Te-125(p,x)H-2	62.0	1.033E+02	1.550E+01
Te-125(p,x)H-2	90.0	1.572E+02	2.358E+01
Te-125(p,x)H-2	1200.0	9.612E+02	7.238E+01
Te-125(p,x)H-3	62.0	2.292E+01	2.192E+00
Te-125(p,x)H-3	90.0	3.606E+01	1.773E+00
Te-125(p,x)H-3	150.0	1.669E+01	1.951E+00
Te-125(p,x)H-3	660.0	1.396E+02	1.552E+01
Te-125(p,x)H-3	1200.0	3.624E+02	3.311E+01
Te-125(p,x)He-3	62.0	4.645E+00	4.001E-01
Te-125(p,x)He-3	90.0	9.657E+00	1.056E+00
Te-125(p,x)He-3	150.0	8.820E+00	3.775E-01
Te-125(p,x)He-3	800.0	5.582E+01	1.047E+00
Te-125(p,x)He-3	1200.0	7.915E+01	4.746E+00
Te-125(p,x)He-4	62.0	6.630E+01	1.955E+01
Te-125(p,x)He-4	90.0	1.023E+02	5.222E+01
Te-125(p,x)He-4	150.0	1.181E+02	4.615E+01
Te-125(p,x)He-4	800.0	6.430E+02	5.221E+01
Te-125(p,x)He-4	1200.0	9.971E+02	6.605E+01
Te-126(p,x)H-1	62.0	7.828E+02	1.547E+01
Te-126(p,x)H-1	90.0	1.101E+03	3.773E+01
Te-126(p,x)H-1	1200.0	4.684E+03	2.004E+02
Te-126(p,x)H-2	62.0	9.321E+01	1.398E+01
Te-126(p,x)H-2	90.0	1.467E+02	2.200E+01
Te-126(p,x)H-2	1200.0	9.508E+02	7.002E+01
Te-126(p,x)H-3	62.0	2.295E+01	1.289E+00
Te-126(p,x)H-3	90.0	3.722E+01	1.074E+00
Te-126(p,x)H-3	150.0	1.690E+01	2.301E+00
Te-126(p,x)H-3	660.0	1.417E+02	1.691E+01
Te-126(p,x)H-3	1200.0	3.700E+02	3.163E+01
Te-126(p,x)He-3	62.0	3.511E+00	1.038E-01
Te-126(p,x)He-3	90.0	7.816E+00	6.472E-01
Te-126(p,x)He-3	150.0	7.645E+00	2.357E-01
Te-126(p,x)He-3	800.0	5.471E+01	2.178E+00
Te-126(p,x)He-3	1200.0	7.558E+01	3.598E+00
Te-126(p,x)He-4	62.0	5.604E+01	1.538E+01
Te-126(p,x)He-4	90.0	8.611E+01	3.742E+01
Te-126(p,x)He-4	150.0	1.021E+02	4.006E+01
Te-126(p,x)He-4	800.0	6.083E+02	4.230E+01
Te-126(p,x)He-4	1200.0	9.599E+02	6.649E+01
Te-128(p,x)H-1	62.0	7.440E+02	1.700E+01
Te-128(p,x)H-1	90.0	1.057E+03	3.433E+01
Te-128(p,x)H-1	1200.0	4.470E+03	2.389E+02
Te-128(p,x)H-2	62.0	9.072E+01	1.361E+01
Te-128(p,x)H-2	90.0	1.424E+02	2.136E+01
Te-128(p,x)H-2	1200.0	9.363E+02	7.699E+01
Te-128(p,x)H-3	62.0	2.495E+01	1.981E+00

Te-128(p,x)H-3	90.0	3.908E+01	7.322E-01
Te-128(p,x)H-3	150.0	1.795E+01	1.798E+00
Te-128(p,x)H-3	660.0	1.449E+02	1.746E+01
Te-128(p,x)H-3	1200.0	3.833E+02	3.002E+01
Te-128(p,x)He-3	62.0	3.214E+00	1.919E-01
Te-128(p,x)He-3	90.0	7.175E+00	7.825E-01
Te-128(p,x)He-3	150.0	6.961E+00	1.715E-01
Te-128(p,x)He-3	800.0	5.028E+01	7.925E-01
Te-128(p,x)He-3	1200.0	6.975E+01	4.181E+00
Te-128(p,x)He-4	62.0	4.449E+01	1.143E+01
Te-128(p,x)He-4	90.0	6.866E+01	2.829E+01
Te-128(p,x)He-4	150.0	7.914E+01	3.054E+01
Te-128(p,x)He-4	800.0	5.460E+02	3.786E+01
Te-128(p,x)He-4	1200.0	8.861E+02	7.962E+01
Te-130(p,x)H-1	62.0	7.337E+02	3.241E+01
Te-130(p,x)H-1	90.0	1.050E+03	4.056E+01
Te-130(p,x)H-1	1200.0	4.281E+03	2.997E+02
Te-130(p,x)H-2	62.0	8.984E+01	1.348E+01
Te-130(p,x)H-2	90.0	1.397E+02	2.096E+01
Te-130(p,x)H-2	1200.0	9.219E+02	8.119E+01
Te-130(p,x)H-3	62.0	2.581E+01	1.541E+00
Te-130(p,x)H-3	90.0	4.067E+01	1.847E-01
Te-130(p,x)H-3	150.0	1.786E+01	2.301E+00
Te-130(p,x)H-3	660.0	1.474E+02	1.480E+01
Te-130(p,x)H-3	1200.0	3.971E+02	3.116E+01
Te-130(p,x)He-3	62.0	2.926E+00	2.287E-01
Te-130(p,x)He-3	90.0	6.536E+00	7.956E-01
Te-130(p,x)He-3	150.0	6.339E+00	1.630E-01
Te-130(p,x)He-3	800.0	4.657E+01	1.749E+00
Te-130(p,x)He-3	1200.0	6.552E+01	5.030E+00
Te-130(p,x)He-4	62.0	3.647E+01	9.853E+00
Te-130(p,x)He-4	90.0	5.484E+01	2.485E+01
Te-130(p,x)He-4	150.0	6.172E+01	2.405E+01
Te-130(p,x)He-4	800.0	4.835E+02	3.823E+01
Te-130(p,x)He-4	1200.0	8.197E+02	9.599E+01
I-127(p,x)H-1	62.0	7.956E+02	4.115E+01
I-127(p,x)H-1	90.0	1.136E+03	4.193E+01
I-127(p,x)H-1	1200.0	4.957E+03	1.900E+02
I-127(p,x)H-2	62.0	8.894E+01	1.334E+01
I-127(p,x)H-2	90.0	1.441E+02	2.162E+01
I-127(p,x)H-2	1200.0	9.794E+02	7.091E+01
I-127(p,x)H-3	62.0	2.163E+01	2.928E+00
I-127(p,x)H-3	90.0	3.429E+01	2.369E+00
I-127(p,x)H-3	150.0	1.695E+01	1.659E+00
I-127(p,x)H-3	660.0	1.409E+02	1.755E+01
I-127(p,x)H-3	1200.0	3.662E+02	3.152E+01
I-127(p,x)He-3	62.0	4.318E+00	5.619E-01
I-127(p,x)He-3	90.0	9.137E+00	5.087E-01
I-127(p,x)He-3	150.0	8.736E+00	6.927E-01
I-127(p,x)He-3	800.0	5.884E+01	3.227E+00
I-127(p,x)He-3	1200.0	8.170E+01	4.654E+00
I-127(p,x)He-4	62.0	7.836E+01	1.071E+01
I-127(p,x)He-4	90.0	1.156E+02	2.862E+01
I-127(p,x)He-4	150.0	1.266E+02	3.916E+01
I-127(p,x)He-4	800.0	6.754E+02	7.092E+01
I-127(p,x)He-4	1200.0	1.038E+03	7.355E+01
Xe-124(p,x)H-1	62.0	1.280E+03	6.299E+01
Xe-124(p,x)H-1	90.0	1.597E+03	5.369E+01
Xe-124(p,x)H-1	1200.0	5.915E+03	2.284E+02
Xe-124(p,x)H-2	62.0	1.028E+02	1.542E+01
Xe-124(p,x)H-2	90.0	1.637E+02	2.455E+01
Xe-124(p,x)H-2	1200.0	1.006E+03	4.628E+01
Xe-124(p,x)H-3	62.0	1.734E+01	9.889E-01
Xe-124(p,x)H-3	90.0	3.018E+01	2.223E+00
Xe-124(p,x)H-3	150.0	1.490E+01	1.563E+00
Xe-124(p,x)H-3	660.0	1.259E+02	1.318E+01
Xe-124(p,x)H-3	1200.0	3.255E+02	2.135E+01
Xe-124(p,x)He-3	62.0	4.935E+00	8.041E-02
Xe-124(p,x)He-3	90.0	1.099E+01	2.806E-01
Xe-124(p,x)He-3	150.0	1.104E+01	1.820E-01
Xe-124(p,x)He-3	800.0	7.699E+01	6.432E+00
Xe-124(p,x)He-3	1200.0	1.020E+02	5.668E+00
Xe-124(p,x)He-4	62.0	1.463E+02	2.374E+01
Xe-124(p,x)He-4	90.0	2.091E+02	6.573E+01
Xe-124(p,x)He-4	150.0	2.281E+02	6.405E+01
Xe-124(p,x)He-4	800.0	8.857E+02	1.502E+02
Xe-124(p,x)He-4	1200.0	1.264E+03	1.192E+02
Xe-126(p,x)H-1	62.0	1.068E+03	4.003E+01
Xe-126(p,x)H-1	90.0	1.379E+03	4.654E+01
Xe-126(p,x)H-1	1200.0	5.560E+03	2.034E+02
Xe-126(p,x)H-2	62.0	9.967E+01	1.495E+01
Xe-126(p,x)H-2	90.0	1.582E+02	2.373E+01
Xe-126(p,x)H-2	1200.0	1.008E+03	5.441E+01
Xe-126(p,x)H-3	62.0	1.889E+01	1.163E+00
Xe-126(p,x)H-3	90.0	3.224E+01	2.393E+00
Xe-126(p,x)H-3	150.0	1.572E+01	1.627E+00
Xe-126(p,x)H-3	660.0	1.316E+02	1.492E+01
Xe-126(p,x)H-3	1200.0	3.437E+02	2.788E+01
Xe-126(p,x)He-3	62.0	4.402E+00	5.085E-02
Xe-126(p,x)He-3	90.0	9.830E+00	3.173E-01
Xe-126(p,x)He-3	150.0	9.811E+00	2.173E-01
Xe-126(p,x)He-3	800.0	7.021E+01	4.905E+00
Xe-126(p,x)He-3	1200.0	9.432E+01	4.961E+00
Xe-126(p,x)He-4	62.0	1.121E+02	1.341E+01
Xe-126(p,x)He-4	90.0	1.597E+02	3.912E+01
Xe-126(p,x)He-4	150.0	1.825E+02	4.637E+01
Xe-126(p,x)He-4	800.0	8.171E+02	1.249E+02
Xe-126(p,x)He-4	1200.0	1.196E+03	1.049E+02
Xe-128(p,x)H-1	62.0	9.098E+02	9.153E+00
Xe-128(p,x)H-1	90.0	1.246E+03	4.186E+01
Xe-128(p,x)H-1	1200.0	5.247E+03	1.720E+02
Xe-128(p,x)H-2	62.0	9.718E+01	1.458E+01
Xe-128(p,x)H-2	90.0	1.535E+02	2.302E+01
Xe-128(p,x)H-2	1200.0	9.988E+02	5.684E+01
Xe-128(p,x)H-3	62.0	2.045E+01	1.133E+00
Xe-128(p,x)H-3	90.0	3.434E+01	2.376E+00
Xe-128(p,x)H-3	150.0	1.647E+01	1.672E+00
Xe-128(p,x)H-3	660.0	1.378E+02	1.484E+01
Xe-128(p,x)H-3	1200.0	3.605E+02	3.073E+01
Xe-128(p,x)He-3	62.0	3.996E+00	7.041E-02
Xe-128(p,x)He-3	90.0	8.926E+00	5.376E-01
Xe-128(p,x)He-3	150.0	8.812E+00	2.936E-01
Xe-128(p,x)He-3	800.0	6.439E+01	4.218E+00
Xe-128(p,x)He-3	1200.0	8.831E+01	5.268E+00
Xe-128(p,x)He-4	62.0	8.425E+01	1.069E+01
Xe-128(p,x)He-4	90.0	1.233E+02	2.910E+01
Xe-128(p,x)He-4	150.0	1.414E+02	3.121E+01
Xe-128(p,x)He-4	800.0	7.441E+02	9.691E+01
Xe-128(p,x)He-4	1200.0	1.117E+03	8.337E+01
Xe-129(p,x)H-1	62.0	8.646E+02	7.602E+00
Xe-129(p,x)H-1	90.0	1.195E+03	3.725E+01
Xe-129(p,x)H-1	1200.0	5.117E+03	1.897E+02
Xe-129(p,x)H-2	62.0	1.050E+02	1.575E+01
Xe-129(p,x)H-2	90.0	1.600E+02	2.400E+01
Xe-129(p,x)H-2	1200.0	1.000E+03	6.374E+01
Xe-129(p,x)H-3	62.0	2.173E+01	2.010E+00
Xe-129(p,x)H-3	90.0	3.476E+01	1.110E+00
Xe-129(p,x)H-3	150.0	1.682E+01	1.379E+00
Xe-129(p,x)H-3	660.0	1.412E+02	1.531E+01
Xe-129(p,x)H-3	1200.0	3.699E+02	3.001E+01
Xe-129(p,x)He-3	62.0	4.648E+00	3.812E-01
Xe-129(p,x)He-3	90.0	9.756E+00	8.732E-01
Xe-129(p,x)He-3	150.0	9.239E+00	2.654E-01
Xe-129(p,x)He-3	800.0	6.136E+01	3.240E+00
Xe-129(p,x)He-3	1200.0	8.443E+01	5.682E+00
Xe-129(p,x)He-4	62.0	7.273E+01	1.389E+01
Xe-129(p,x)He-4	90.0	1.088E+02	3.278E+01
Xe-129(p,x)He-4	150.0	1.247E+02	2.880E+01
Xe-129(p,x)He-4	800.0	7.110E+02	8.052E+01
Xe-129(p,x)He-4	1200.0	1.083E+03	7.880E+01
Xe-130(p,x)H-1	62.0	8.139E+02	1.025E+01
Xe-130(p,x)H-1	90.0	1.152E+03	4.215E+01
Xe-130(p,x)H-1	1200.0	4.974E+03	1.980E+02
Xe-130(p,x)H-2	62.0	9.535E+01	1.430E+01
Xe-130(p,x)H-2	90.0	1.500E+02	2.249E+01
Xe-130(p,x)H-2	1200.0	9.935E+02	6.723E+01
Xe-130(p,x)H-3	62.0	2.188E+01	1.035E+00
Xe-130(p,x)H-3	90.0	3.635E+01	1.847E+00
Xe-130(p,x)H-3	150.0	1.748E+01	1.492E+00
Xe-130(p,x)H-3	660.0	1.441E+02	1.485E+01
Xe-130(p,x)H-3	1200.0	3.760E+02	2.573E+01
Xe-130(p,x)He-3	62.0	3.607E+00	1.180E-01
Xe-130(p,x)He-3	90.0	8.057E+00	5.900E-01
Xe-130(p,x)He-3	150.0	8.094E+00	2.034E-01
Xe-130(p,x)He-3	800.0	5.893E+01	3.653E+00
Xe-130(p,x)He-3	1200.0	8.238E+01	5.137E+00
Xe-130(p,x)He-4	62.0	6.572E+01	8.486E+00
Xe-130(p,x)He-4	90.0	1.035E+02	2.046E+01
Xe-130(p,x)He-4	150.0	1.241E+02	2.126E+01
Xe-130(p,x)He-4	800.0	6.766E+02	7.115E+01

Xe-130(p,x)He-4	1200.0	1.038E+03	7.356E+01
Xe-131(p,x)H-1	62.0	8.071E+02	2.973E+01
Xe-131(p,x)H-1	90.0	1.146E+03	4.737E+01
Xe-131(p,x)H-1	1200.0	4.860E+03	2.122E+02
Xe-131(p,x)H-2	62.0	1.023E+02	1.534E+01
Xe-131(p,x)H-2	90.0	1.555E+02	2.333E+01
Xe-131(p,x)H-2	1200.0	9.883E+02	7.439E+01
Xe-131(p,x)H-3	62.0	2.266E+01	1.640E+00
Xe-131(p,x)H-3	90.0	3.658E+01	1.435E+00
Xe-131(p,x)H-3	150.0	1.812E+01	9.334E-01
Xe-131(p,x)H-3	660.0	1.460E+02	1.605E+01
Xe-131(p,x)H-3	1200.0	3.816E+02	3.098E+01
Xe-131(p,x)He-3	62.0	4.246E+00	3.752E-01
Xe-131(p,x)He-3	90.0	8.917E+00	1.047E+00
Xe-131(p,x)He-3	150.0	8.383E+00	2.752E-01
Xe-131(p,x)He-3	800.0	5.724E+01	2.717E+00
Xe-131(p,x)He-3	1200.0	7.817E+01	5.377E+00
Xe-131(p,x)He-4	62.0	5.508E+01	1.322E+01
Xe-131(p,x)He-4	90.0	9.275E+01	2.488E+01
Xe-131(p,x)He-4	150.0	1.210E+02	3.273E+01
Xe-131(p,x)He-4	800.0	6.427E+02	5.905E+01
Xe-131(p,x)He-4	1200.0	1.005E+03	7.378E+01
Xe-132(p,x)H-1	62.0	7.741E+02	1.879E+01
Xe-132(p,x)H-1	90.0	1.112E+03	3.872E+01
Xe-132(p,x)H-1	1200.0	4.752E+03	2.327E+02
Xe-132(p,x)H-2	62.0	9.278E+01	1.392E+01
Xe-132(p,x)H-2	90.0	1.459E+02	2.189E+01
Xe-132(p,x)H-2	1200.0	9.824E+02	8.046E+01
Xe-132(p,x)H-3	62.0	2.255E+01	8.622E-01
Xe-132(p,x)H-3	90.0	3.824E+01	1.187E+00
Xe-132(p,x)H-3	150.0	1.837E+01	1.410E+00
Xe-132(p,x)H-3	660.0	1.475E+02	1.443E+01
Xe-132(p,x)H-3	1200.0	3.891E+02	2.867E+01
Xe-132(p,x)He-3	62.0	3.287E+00	2.094E-01
Xe-132(p,x)He-3	90.0	7.356E+00	7.589E-01
Xe-132(p,x)He-3	150.0	7.321E+00	1.963E-01
Xe-132(p,x)He-3	800.0	5.576E+01	3.543E+00
Xe-132(p,x)He-3	1200.0	7.501E+01	4.491E+00
Xe-132(p,x)He-4	62.0	4.727E+01	1.183E+01
Xe-132(p,x)He-4	90.0	8.023E+01	2.063E+01
Xe-132(p,x)He-4	150.0	1.172E+02	3.198E+01
Xe-132(p,x)He-4	800.0	6.086E+02	6.152E+01
Xe-132(p,x)He-4	1200.0	9.675E+02	7.999E+01
Xe-134(p,x)H-1	62.0	7.445E+02	1.817E+01
Xe-134(p,x)H-1	90.0	1.080E+03	3.485E+01
Xe-134(p,x)H-1	1200.0	4.540E+03	2.863E+02
Xe-134(p,x)H-2	62.0	9.135E+01	1.370E+01
Xe-134(p,x)H-2	90.0	1.437E+02	2.155E+01
Xe-134(p,x)H-2	1200.0	9.670E+02	8.478E+01
Xe-134(p,x)H-3	62.0	2.447E+01	1.459E+00
Xe-134(p,x)H-3	90.0	3.956E+01	7.258E-01
Xe-134(p,x)H-3	150.0	1.864E+01	1.719E+00
Xe-134(p,x)H-3	660.0	1.515E+02	1.809E+01
Xe-134(p,x)H-3	1200.0	4.016E+02	2.562E+01
Xe-134(p,x)He-3	62.0	3.015E+00	2.324E-01
Xe-134(p,x)He-3	90.0	6.742E+00	7.462E-01
Xe-134(p,x)He-3	150.0	6.760E+00	1.560E-01
Xe-134(p,x)He-3	800.0	5.169E+01	3.665E+00
Xe-134(p,x)He-3	1200.0	7.031E+01	5.155E+00
Xe-134(p,x)He-4	62.0	3.968E+01	9.220E+00
Xe-134(p,x)He-4	90.0	7.190E+01	1.940E+01
Xe-134(p,x)He-4	150.0	1.252E+02	5.275E+01
Xe-134(p,x)He-4	800.0	5.477E+02	5.442E+01
Xe-134(p,x)He-4	1200.0	8.897E+02	8.289E+01
Xe-136(p,x)H-1	62.0	7.434E+02	5.181E+01
Xe-136(p,x)H-1	90.0	1.069E+03	4.397E+01
Xe-136(p,x)H-1	1200.0	4.357E+03	3.447E+02
Xe-136(p,x)H-2	62.0	8.931E+01	1.340E+01
Xe-136(p,x)H-2	90.0	1.399E+02	2.099E+01
Xe-136(p,x)H-2	1200.0	9.538E+02	9.752E+01
Xe-136(p,x)H-3	62.0	2.520E+01	1.161E+00
Xe-136(p,x)H-3	90.0	4.106E+01	1.246E-01
Xe-136(p,x)H-3	150.0	1.927E+01	1.833E+00
Xe-136(p,x)H-3	660.0	1.528E+02	1.564E+01
Xe-136(p,x)H-3	1200.0	4.147E+02	2.676E+01
Xe-136(p,x)He-3	62.0	2.822E+00	2.936E-01
Xe-136(p,x)He-3	90.0	6.266E+00	8.395E-01
Xe-136(p,x)He-3	150.0	6.277E+00	3.231E-01
Xe-136(p,x)He-3	800.0	4.811E+01	3.599E+00
Xe-136(p,x)He-3	1200.0	6.556E+01	5.856E+00
Xe-136(p,x)He-4	62.0	3.220E+01	8.986E+00
Xe-136(p,x)He-4	90.0	1.029E+02	5.757E+01
Xe-136(p,x)He-4	150.0	1.762E+02	1.266E+02
Xe-136(p,x)He-4	800.0	4.882E+02	6.110E+01
Xe-136(p,x)He-4	1200.0	8.207E+02	1.041E+02
Cs-133(p,x)H-1	62.0	7.708E+02	4.133E+01
Cs-133(p,x)H-1	90.0	1.131E+03	4.051E+01
Cs-133(p,x)H-1	1200.0	5.018E+03	2.229E+02
Cs-133(p,x)H-2	62.0	8.778E+01	1.317E+01
Cs-133(p,x)H-2	90.0	1.430E+02	2.146E+01
Cs-133(p,x)H-2	1200.0	1.010E+03	7.668E+01
Cs-133(p,x)H-3	62.0	2.180E+01	2.851E+00
Cs-133(p,x)H-3	90.0	3.502E+01	2.389E+00
Cs-133(p,x)H-3	150.0	1.799E+01	1.325E+00
Cs-133(p,x)H-3	660.0	1.469E+02	1.351E+01
Cs-133(p,x)H-3	1200.0	3.859E+02	2.490E+01
Cs-133(p,x)He-3	62.0	4.095E+00	4.327E-01
Cs-133(p,x)He-3	90.0	8.701E+00	3.729E-01
Cs-133(p,x)He-3	150.0	8.607E+00	5.618E-01
Cs-133(p,x)He-3	800.0	6.026E+01	3.613E+00
Cs-133(p,x)He-3	1200.0	8.147E+01	5.645E+00
Cs-133(p,x)He-4	62.0	6.127E+01	1.827E+01
Cs-133(p,x)He-4	90.0	9.511E+01	2.806E+01
Cs-133(p,x)He-4	150.0	1.173E+02	2.187E+01
Cs-133(p,x)He-4	800.0	6.800E+02	6.514E+01
Cs-133(p,x)He-4	1200.0	1.054E+03	7.393E+01
Ba-130(p,x)H-1	62.0	1.186E+03	3.832E+01
Ba-130(p,x)H-1	90.0	1.510E+03	4.876E+01
Ba-130(p,x)H-1	1200.0	5.925E+03	2.510E+02
Ba-130(p,x)H-2	62.0	1.012E+02	1.518E+01
Ba-130(p,x)H-2	90.0	1.618E+02	2.427E+01
Ba-130(p,x)H-2	1200.0	1.050E+03	5.120E+01
Ba-130(p,x)H-3	62.0	1.811E+01	1.008E+00
Ba-130(p,x)H-3	90.0	3.149E+01	2.736E+00
Ba-130(p,x)H-3	150.0	1.600E+01	1.543E+00
Ba-130(p,x)H-3	660.0	1.315E+02	1.227E+01
Ba-130(p,x)H-3	1200.0	3.470E+02	2.278E+01
Ba-130(p,x)He-3	62.0	4.571E+00	8.343E-03
Ba-130(p,x)He-3	90.0	1.017E+01	3.192E-01
Ba-130(p,x)He-3	150.0	1.030E+01	1.843E-01
Ba-130(p,x)He-3	800.0	7.673E+01	7.495E+00
Ba-130(p,x)He-3	1200.0	1.011E+02	7.006E+00
Ba-130(p,x)He-4	62.0	1.249E+02	1.776E+01
Ba-130(p,x)He-4	90.0	1.701E+02	3.931E+01
Ba-130(p,x)He-4	150.0	1.836E+02	3.761E+01
Ba-130(p,x)He-4	800.0	8.885E+02	1.267E+02
Ba-130(p,x)He-4	1200.0	1.285E+03	1.188E+02
Ba-132(p,x)H-1	62.0	9.965E+02	2.132E+01
Ba-132(p,x)H-1	90.0	1.333E+03	4.217E+01
Ba-132(p,x)H-1	1200.0	5.595E+03	2.142E+02
Ba-132(p,x)H-2	62.0	9.867E+01	1.480E+01
Ba-132(p,x)H-2	90.0	1.572E+02	2.358E+01
Ba-132(p,x)H-2	1200.0	1.040E+03	5.348E+01
Ba-132(p,x)H-3	62.0	1.950E+01	1.005E+00
Ba-132(p,x)H-3	90.0	3.353E+01	2.551E+00
Ba-132(p,x)H-3	150.0	1.679E+01	1.479E+00
Ba-132(p,x)H-3	660.0	1.385E+02	1.351E+01
Ba-132(p,x)H-3	1200.0	3.637E+02	2.189E+01
Ba-132(p,x)He-3	62.0	4.127E+00	9.732E-02
Ba-132(p,x)He-3	90.0	9.200E+00	5.189E-01
Ba-132(p,x)He-3	150.0	9.223E+00	2.371E-01
Ba-132(p,x)He-3	800.0	6.886E+01	4.235E+00
Ba-132(p,x)He-3	1200.0	9.265E+01	5.409E+00
Ba-132(p,x)He-4	62.0	9.669E+01	1.129E+01
Ba-132(p,x)He-4	90.0	1.376E+02	2.997E+01
Ba-132(p,x)He-4	150.0	1.524E+02	3.132E+01
Ba-132(p,x)He-4	800.0	8.195E+02	9.617E+01
Ba-132(p,x)He-4	1200.0	1.211E+03	9.251E+01
Ba-134(p,x)H-1	62.0	8.627E+02	1.381E+01
Ba-134(p,x)H-1	90.0	1.227E+03	4.469E+01
Ba-134(p,x)H-1	1200.0	5.299E+03	2.239E+02
Ba-134(p,x)H-2	62.0	9.671E+01	1.451E+01
Ba-134(p,x)H-2	90.0	1.528E+02	2.292E+01
Ba-134(p,x)H-2	1200.0	1.029E+03	6.459E+01
Ba-134(p,x)H-3	62.0	2.050E+01	8.907E-01
Ba-134(p,x)H-3	90.0	3.517E+01	2.246E+00
Ba-134(p,x)H-3	150.0	1.750E+01	1.566E+00
Ba-134(p,x)H-3	660.0	1.442E+02	1.455E+01
Ba-134(p,x)H-3	1200.0	3.809E+02	2.288E+01
Ba-134(p,x)He-3	62.0	3.703E+00	1.327E-01

Ba-134(p,x)He-3	90.0	8.294E+00	5.476E-01
Ba-134(p,x)He-3	150.0	8.452E+00	1.949E-01
Ba-134(p,x)He-3	800.0	6.374E+01	3.760E+00
Ba-134(p,x)He-3	1200.0	8.632E+01	5.512E+00
Ba-134(p,x)He-4	62.0	7.105E+01	1.152E+01
Ba-134(p,x)He-4	90.0	1.067E+02	2.637E+01
Ba-134(p,x)He-4	150.0	1.223E+02	2.749E+01
Ba-134(p,x)He-4	800.0	7.499E+02	6.889E+01
Ba-134(p,x)He-4	1200.0	1.132E+03	7.589E+01
Ba-135(p,x)H-1	62.0	8.295E+02	4.435E+00
Ba-135(p,x)H-1	90.0	1.186E+03	4.152E+01
Ba-135(p,x)H-1	1200.0	5.153E+03	2.316E+02
Ba-135(p,x)H-2	62.0	1.031E+02	1.547E+01
Ba-135(p,x)H-2	90.0	1.582E+02	2.373E+01
Ba-135(p,x)H-2	1200.0	1.024E+03	6.841E+01
Ba-135(p,x)H-3	62.0	2.158E+01	1.791E+00
Ba-135(p,x)H-3	90.0	3.524E+01	8.899E-01
Ba-135(p,x)H-3	150.0	1.779E+01	1.235E+00
Ba-135(p,x)H-3	660.0	1.447E+02	1.314E+01
Ba-135(p,x)H-3	1200.0	3.883E+02	2.238E+01
Ba-135(p,x)He-3	62.0	4.264E+00	3.446E-01
Ba-135(p,x)He-3	90.0	9.008E+00	8.626E-01
Ba-135(p,x)He-3	150.0	8.751E+00	2.740E-01
Ba-135(p,x)He-3	800.0	6.143E+01	3.465E+00
Ba-135(p,x)He-3	1200.0	8.366E+01	4.692E+00
Ba-135(p,x)He-4	62.0	6.134E+01	1.210E+01
Ba-135(p,x)He-4	90.0	9.461E+01	2.739E+01
Ba-135(p,x)He-4	150.0	1.089E+02	2.502E+01
Ba-135(p,x)He-4	800.0	7.120E+02	6.952E+01
Ba-135(p,x)He-4	1200.0	1.092E+03	7.699E+01
Ba-136(p,x)H-1	62.0	7.860E+02	1.468E+01
Ba-136(p,x)H-1	90.0	1.141E+03	3.821E+01
Ba-136(p,x)H-1	1200.0	5.021E+03	2.350E+02
Ba-136(p,x)H-2	62.0	9.410E+01	1.411E+01
Ba-136(p,x)H-2	90.0	1.490E+02	2.235E+01
Ba-136(p,x)H-2	1200.0	1.019E+03	7.216E+01
Ba-136(p,x)H-3	62.0	2.164E+01	8.403E-01
Ba-136(p,x)H-3	90.0	3.675E+01	1.821E+00
Ba-136(p,x)H-3	150.0	1.817E+01	1.492E+00
Ba-136(p,x)H-3	660.0	1.480E+02	1.374E+01
Ba-136(p,x)H-3	1200.0	3.961E+02	1.890E+01
Ba-136(p,x)He-3	62.0	3.383E+00	2.233E-01
Ba-136(p,x)He-3	90.0	7.580E+00	7.133E-01
Ba-136(p,x)He-3	150.0	7.757E+00	1.807E-01
Ba-136(p,x)He-3	800.0	5.957E+01	4.395E+00
Ba-136(p,x)He-3	1200.0	8.045E+01	5.012E+00
Ba-136(p,x)He-4	62.0	5.356E+01	1.016E+01
Ba-136(p,x)He-4	90.0	8.716E+01	1.954E+01
Ba-136(p,x)He-4	150.0	1.127E+02	1.470E+01
Ba-136(p,x)He-4	800.0	6.806E+02	6.636E+01
Ba-136(p,x)He-4	1200.0	1.053E+03	7.139E+01
Ba-137(p,x)H-1	62.0	7.766E+02	8.844E+00
Ba-137(p,x)H-1	90.0	1.129E+03	4.192E+01
Ba-137(p,x)H-1	1200.0	4.915E+03	2.704E+02
Ba-137(p,x)H-2	62.0	9.844E+01	1.477E+01
Ba-137(p,x)H-2	90.0	1.516E+02	2.274E+01
Ba-137(p,x)H-2	1200.0	1.017E+03	8.112E+01
Ba-137(p,x)H-3	62.0	2.227E+01	1.511E+00
Ba-137(p,x)H-3	90.0	3.657E+01	1.242E+00
Ba-137(p,x)H-3	150.0	1.846E+01	9.859E-01
Ba-137(p,x)H-3	660.0	1.510E+02	1.373E+01
Ba-137(p,x)H-3	1200.0	4.047E+02	2.289E+01
Ba-137(p,x)He-3	62.0	3.821E+00	3.325E-01
Ba-137(p,x)He-3	90.0	8.124E+00	8.861E-01
Ba-137(p,x)He-3	150.0	8.011E+00	1.876E-01
Ba-137(p,x)He-3	800.0	5.741E+01	3.816E+00
Ba-137(p,x)He-3	1200.0	7.740E+01	6.510E+00
Ba-137(p,x)He-4	62.0	4.596E+01	1.206E+01
Ba-137(p,x)He-4	90.0	7.697E+01	2.252E+01
Ba-137(p,x)He-4	150.0	1.099E+02	2.180E+01
Ba-137(p,x)He-4	800.0	6.468E+02	6.666E+01
Ba-137(p,x)He-4	1200.0	1.019E+03	8.085E+01
Ba-138(p,x)H-1	62.0	7.454E+02	6.463E+00
Ba-138(p,x)H-1	90.0	1.098E+03	3.563E+01
Ba-138(p,x)H-1	1200.0	4.791E+03	2.777E+02
Ba-138(p,x)H-2	62.0	9.247E+01	1.387E+01
Ba-138(p,x)H-2	90.0	1.460E+02	2.189E+01
Ba-138(p,x)H-2	1200.0	1.007E+03	8.144E+01
Ba-138(p,x)H-3	62.0	2.241E+01	1.035E+00
Ba-138(p,x)H-3	90.0	3.841E+01	1.972E+00
Ba-138(p,x)H-3	150.0	1.855E+01	1.667E+00
Ba-138(p,x)H-3	660.0	1.530E+02	1.661E+01
Ba-138(p,x)H-3	1200.0	4.090E+02	1.985E+01
Ba-138(p,x)He-3	62.0	3.139E+00	2.310E-01
Ba-138(p,x)He-3	90.0	6.993E+00	6.765E-01
Ba-138(p,x)He-3	150.0	7.516E+00	5.484E-01
Ba-138(p,x)He-3	800.0	5.537E+01	3.628E+00
Ba-138(p,x)He-3	1200.0	7.498E+01	4.030E+00
Ba-138(p,x)He-4	62.0	4.137E+01	1.016E+01
Ba-138(p,x)He-4	90.0	7.014E+01	1.735E+01
Ba-138(p,x)He-4	150.0	1.144E+02	2.921E+01
Ba-138(p,x)He-4	800.0	6.154E+02	6.383E+01
Ba-138(p,x)He-4	1200.0	9.791E+02	8.168E+01
La-138(p,x)H-1	62.0	7.721E+02	2.925E+01
La-138(p,x)H-1	90.0	1.147E+03	3.049E+01
La-138(p,x)H-1	1200.0	5.174E+03	2.477E+02
La-138(p,x)H-2	62.0	9.225E+01	1.384E+01
La-138(p,x)H-2	90.0	1.493E+02	2.239E+01
La-138(p,x)H-2	1200.0	1.039E+03	7.399E+01
La-138(p,x)H-3	62.0	2.087E+01	3.171E+00
La-138(p,x)H-3	90.0	3.346E+01	4.852E-01
La-138(p,x)H-3	150.0	1.801E+01	8.803E-01
La-138(p,x)H-3	660.0	1.488E+02	1.393E+01
La-138(p,x)H-3	1200.0	3.965E+02	2.177E+01
La-138(p,x)He-3	62.0	4.595E+00	7.770E-01
La-138(p,x)He-3	90.0	9.304E+00	1.031E+00
La-138(p,x)He-3	150.0	8.882E+00	6.632E-01
La-138(p,x)He-3	800.0	6.204E+01	4.416E+00
La-138(p,x)He-3	1200.0	8.299E+01	3.761E+00
La-138(p,x)He-4	62.0	5.835E+01	1.591E+01
La-138(p,x)He-4	90.0	9.100E+01	2.644E+01
La-138(p,x)He-4	150.0	1.118E+02	1.930E+01
La-138(p,x)He-4	800.0	7.147E+02	6.965E+01
La-138(p,x)He-4	1200.0	1.097E+03	7.042E+01
La-139(p,x)H-1	62.0	7.422E+02	2.550E+01
La-139(p,x)H-1	90.0	1.113E+03	2.787E+01
La-139(p,x)H-1	1200.0	5.045E+03	2.592E+02
La-139(p,x)H-2	62.0	8.716E+01	1.307E+01
La-139(p,x)H-2	90.0	1.421E+02	2.132E+01
La-139(p,x)H-2	1200.0	1.024E+03	6.831E+01
La-139(p,x)H-3	62.0	2.129E+01	2.628E+00
La-139(p,x)H-3	90.0	3.501E+01	3.290E+00
La-139(p,x)H-3	150.0	1.837E+01	1.404E+00
La-139(p,x)H-3	660.0	1.493E+02	1.356E+01
La-139(p,x)H-3	1200.0	4.050E+02	2.029E+01
La-139(p,x)He-3	62.0	3.822E+00	3.539E-01
La-139(p,x)He-3	90.0	8.058E+00	4.145E-01
La-139(p,x)He-3	150.0	8.093E+00	4.572E-01
La-139(p,x)He-3	800.0	5.964E+01	4.039E+00
La-139(p,x)He-3	1200.0	8.041E+01	5.860E+00
La-139(p,x)He-4	62.0	5.179E+01	1.846E+01
La-139(p,x)He-4	90.0	8.041E+01	2.722E+01
La-139(p,x)He-4	150.0	1.011E+02	2.018E+01
La-139(p,x)He-4	800.0	6.760E+02	6.935E+01
La-139(p,x)He-4	1200.0	1.055E+03	7.420E+01
Ce-136(p,x)H-1	62.0	1.076E+03	2.589E+01
Ce-136(p,x)H-1	90.0	1.435E+03	5.135E+01
Ce-136(p,x)H-1	1200.0	5.943E+03	2.809E+02
Ce-136(p,x)H-2	62.0	9.977E+01	1.497E+01
Ce-136(p,x)H-2	90.0	1.594E+02	2.392E+01
Ce-136(p,x)H-2	1200.0	1.075E+03	5.392E+01
Ce-136(p,x)H-3	62.0	1.836E+01	1.166E+00
Ce-136(p,x)H-3	90.0	3.222E+01	3.524E+00
Ce-136(p,x)H-3	150.0	1.696E+01	1.462E+00
Ce-136(p,x)H-3	660.0	1.376E+02	8.235E+00
Ce-136(p,x)H-3	1200.0	3.652E+02	1.886E+01
Ce-136(p,x)He-3	62.0	4.171E+00	4.204E-02
Ce-136(p,x)He-3	90.0	9.335E+00	2.924E-01
Ce-136(p,x)He-3	150.0	9.618E+00	2.071E-01
Ce-136(p,x)He-3	800.0	7.372E+01	7.203E+00
Ce-136(p,x)He-3	1200.0	9.846E+01	7.068E+00
Ce-136(p,x)He-4	62.0	1.048E+02	9.183E+00
Ce-136(p,x)He-4	90.0	1.498E+02	2.552E+01
Ce-136(p,x)He-4	150.0	1.653E+02	3.482E+01
Ce-136(p,x)He-4	800.0	8.762E+02	1.059E+02
Ce-136(p,x)He-4	1200.0	1.287E+03	1.016E+02
Ce-138(p,x)H-1	62.0	9.182E+02	2.831E+01
Ce-138(p,x)H-1	90.0	1.304E+03	5.587E+01
Ce-138(p,x)H-1	1200.0	5.610E+03	2.478E+02
Ce-138(p,x)H-2	62.0	9.619E+01	1.443E+01

Ce-138(p,x)H-2	90.0	1.538E+02	2.307E+01
Ce-138(p,x)H-2	1200.0	1.064E+03	5.805E+01
Ce-138(p,x)H-3	62.0	1.897E+01	8.702E-01
Ce-138(p,x)H-3	90.0	3.341E+01	2.708E+00
Ce-138(p,x)H-3	150.0	1.742E+01	1.671E+00
Ce-138(p,x)H-3	660.0	1.426E+02	9.706E+00
Ce-138(p,x)H-3	1200.0	3.813E+02	1.629E+01
Ce-138(p,x)He-3	62.0	3.774E+00	1.473E-01
Ce-138(p,x)He-3	90.0	8.455E+00	5.121E-01
Ce-138(p,x)He-3	150.0	8.634E+00	2.468E-01
Ce-138(p,x)He-3	800.0	6.819E+01	6.457E+00
Ce-138(p,x)He-3	1200.0	9.216E+01	5.177E+00
Ce-138(p,x)He-4	62.0	7.833E+01	1.182E+01
Ce-138(p,x)He-4	90.0	1.136E+02	2.387E+01
Ce-138(p,x)He-4	150.0	1.326E+02	3.034E+01
Ce-138(p,x)He-4	800.0	8.063E+02	8.143E+01
Ce-138(p,x)He-4	1200.0	1.218E+03	7.553E+01
Ce-140(p,x)H-1	62.0	8.109E+02	1.674E+01
Ce-140(p,x)H-1	90.0	1.194E+03	3.532E+01
Ce-140(p,x)H-1	1200.0	5.313E+03	2.502E+02
Ce-140(p,x)H-2	62.0	9.468E+01	1.420E+01
Ce-140(p,x)H-2	90.0	1.504E+02	2.256E+01
Ce-140(p,x)H-2	1200.0	1.052E+03	6.298E+01
Ce-140(p,x)H-3	62.0	2.080E+01	1.506E+00
Ce-140(p,x)H-3	90.0	3.496E+01	3.073E+00
Ce-140(p,x)H-3	150.0	1.930E+01	1.566E+00
Ce-140(p,x)H-3	660.0	1.464E+02	1.122E+01
Ce-140(p,x)H-3	1200.0	4.006E+02	1.319E+01
Ce-140(p,x)He-3	62.0	3.464E+00	1.623E-01
Ce-140(p,x)He-3	90.0	7.737E+00	5.007E-01
Ce-140(p,x)He-3	150.0	8.000E+00	1.625E-01
Ce-140(p,x)He-3	800.0	6.242E+01	4.230E+00
Ce-140(p,x)He-3	1200.0	8.633E+01	6.763E+00
Ce-140(p,x)He-4	62.0	5.797E+01	8.169E+00
Ce-140(p,x)He-4	90.0	8.993E+01	1.773E+01
Ce-140(p,x)He-4	150.0	1.038E+02	2.720E+01
Ce-140(p,x)He-4	800.0	7.350E+02	6.401E+01
Ce-140(p,x)He-4	1200.0	1.134E+03	6.664E+01
Ce-142(p,x)H-1	62.0	8.007E+02	5.944E+01
Ce-142(p,x)H-1	90.0	1.168E+03	5.480E+01
Ce-142(p,x)H-1	1200.0	5.066E+03	2.677E+02
Ce-142(p,x)H-2	62.0	1.057E+02	1.586E+01
Ce-142(p,x)H-2	90.0	1.635E+02	2.452E+01
Ce-142(p,x)H-2	1200.0	1.038E+03	7.558E+01
Ce-142(p,x)H-3	62.0	2.969E+01	2.105E+00
Ce-142(p,x)H-3	90.0	4.612E+01	4.548E-01
Ce-142(p,x)H-3	150.0	2.183E+01	2.203E+00
Ce-142(p,x)H-3	660.0	1.519E+02	1.104E+01
Ce-142(p,x)H-3	1200.0	4.144E+02	1.637E+01
Ce-142(p,x)He-3	62.0	3.694E+00	3.411E-01
Ce-142(p,x)He-3	90.0	7.913E+00	8.658E-01
Ce-142(p,x)He-3	150.0	7.801E+00	1.993E-01
Ce-142(p,x)He-3	800.0	5.881E+01	5.532E+00
Ce-142(p,x)He-3	1200.0	7.975E+01	5.860E+00
Ce-142(p,x)He-4	62.0	5.096E+01	1.961E+01
Ce-142(p,x)He-4	90.0	7.616E+01	3.744E+01
Ce-142(p,x)He-4	150.0	9.505E+01	3.097E+01
Ce-142(p,x)He-4	800.0	6.699E+02	6.542E+01
Ce-142(p,x)He-4	1200.0	1.060E+03	7.874E+01
Pr-141(p,x)H-1	62.0	8.332E+02	2.618E+01
Pr-141(p,x)H-1	90.0	1.238E+03	3.039E+01
Pr-141(p,x)H-1	1200.0	5.617E+03	2.660E+02
Pr-141(p,x)H-2	62.0	8.893E+01	1.334E+01
Pr-141(p,x)H-2	90.0	1.466E+02	2.198E+01
Pr-141(p,x)H-2	1200.0	1.074E+03	5.937E+01
Pr-141(p,x)H-3	62.0	1.901E+01	2.466E+00
Pr-141(p,x)H-3	90.0	3.206E+01	3.630E+00
Pr-141(p,x)H-3	150.0	1.891E+01	1.257E+00
Pr-141(p,x)H-3	660.0	1.447E+02	1.065E+01
Pr-141(p,x)H-3	1200.0	3.911E+02	1.331E+01
Pr-141(p,x)He-3	62.0	4.244E+00	4.516E-01
Pr-141(p,x)He-3	90.0	8.966E+00	5.684E-01
Pr-141(p,x)He-3	150.0	9.076E+00	7.258E-01
Pr-141(p,x)He-3	800.0	6.720E+01	4.621E+00
Pr-141(p,x)He-3	1200.0	9.099E+01	6.867E+00
Pr-141(p,x)He-4	62.0	9.223E+01	1.919E+01
Pr-141(p,x)He-4	90.0	1.391E+02	2.901E+01
Pr-141(p,x)He-4	150.0	1.404E+02	2.724E+01
Pr-141(p,x)He-4	800.0	7.952E+02	6.619E+01
Pr-141(p,x)He-4	1200.0	1.210E+03	6.494E+01
Nd-142(p,x)H-1	62.0	9.492E+02	8.041E+01
Nd-142(p,x)H-1	90.0	1.357E+03	2.156E+01
Nd-142(p,x)H-1	1200.0	5.934E+03	2.719E+02
Nd-142(p,x)H-2	62.0	9.588E+01	1.438E+01
Nd-142(p,x)H-2	90.0	1.546E+02	2.319E+01
Nd-142(p,x)H-2	1200.0	1.089E+03	4.855E+01
Nd-142(p,x)H-3	62.0	1.775E+01	1.057E+00
Nd-142(p,x)H-3	90.0	3.179E+01	3.437E+00
Nd-142(p,x)H-3	150.0	1.752E+01	1.375E+00
Nd-142(p,x)H-3	660.0	1.399E+02	6.826E+00
Nd-142(p,x)H-3	1200.0	3.836E+02	5.675E+00
Nd-142(p,x)He-3	62.0	3.792E+00	9.740E-02
Nd-142(p,x)He-3	90.0	8.526E+00	3.020E-01
Nd-142(p,x)He-3	150.0	9.094E+00	2.898E-01
Nd-142(p,x)He-3	800.0	7.191E+01	6.590E+00
Nd-142(p,x)He-3	1200.0	9.548E+01	6.525E+00
Nd-142(p,x)He-4	62.0	7.850E+01	5.536E+00
Nd-142(p,x)He-4	90.0	1.292E+02	1.474E+01
Nd-142(p,x)He-4	150.0	1.640E+02	4.509E+01
Nd-142(p,x)He-4	800.0	8.516E+02	8.130E+01
Nd-142(p,x)He-4	1200.0	1.282E+03	7.699E+01
Nd-143(p,x)H-1	62.0	9.055E+02	3.100E+01
Nd-143(p,x)H-1	90.0	1.306E+03	2.601E+01
Nd-143(p,x)H-1	1200.0	5.771E+03	2.540E+02
Nd-143(p,x)H-2	62.0	1.118E+02	1.678E+01
Nd-143(p,x)H-2	90.0	1.711E+02	2.567E+01
Nd-143(p,x)H-2	1200.0	1.088E+03	5.036E+01
Nd-143(p,x)H-3	62.0	2.148E+01	1.660E+00
Nd-143(p,x)H-3	90.0	3.534E+01	9.412E-02
Nd-143(p,x)H-3	150.0	1.901E+01	5.453E-01
Nd-143(p,x)H-3	660.0	1.424E+02	5.859E+00
Nd-143(p,x)H-3	1200.0	3.898E+02	4.313E+00
Nd-143(p,x)He-3	62.0	4.903E+00	3.667E-01
Nd-143(p,x)He-3	90.0	1.003E+01	8.188E-01
Nd-143(p,x)He-3	150.0	9.870E+00	4.389E-01
Nd-143(p,x)He-3	800.0	6.769E+01	4.549E+00
Nd-143(p,x)He-3	1200.0	9.180E+01	5.967E+00
Nd-143(p,x)He-4	62.0	6.854E+01	1.230E+01
Nd-143(p,x)He-4	90.0	1.115E+02	2.228E+01
Nd-143(p,x)He-4	150.0	1.475E+02	4.398E+01
Nd-143(p,x)He-4	800.0	8.189E+02	6.418E+01
Nd-143(p,x)He-4	1200.0	1.249E+03	5.759E+01
Nd-144(p,x)H-1	62.0	8.445E+02	1.235E+01
Nd-144(p,x)H-1	90.0	1.251E+03	3.346E+01
Nd-144(p,x)H-1	1200.0	5.624E+03	2.502E+02
Nd-144(p,x)H-2	62.0	1.073E+02	1.610E+01
Nd-144(p,x)H-2	90.0	1.684E+02	2.526E+01
Nd-144(p,x)H-2	1200.0	1.078E+03	4.920E+01
Nd-144(p,x)H-3	62.0	2.495E+01	6.370E-01
Nd-144(p,x)H-3	90.0	4.190E+01	1.672E+00
Nd-144(p,x)H-3	150.0	2.088E+01	1.770E+00
Nd-144(p,x)H-3	660.0	1.455E+02	6.208E+00
Nd-144(p,x)H-3	1200.0	3.978E+02	4.298E+00
Nd-144(p,x)He-3	62.0	3.983E+00	2.298E-01
Nd-144(p,x)He-3	90.0	8.561E+00	5.950E-01
Nd-144(p,x)He-3	150.0	8.755E+00	2.506E-01
Nd-144(p,x)He-3	800.0	6.579E+01	5.792E+00
Nd-144(p,x)He-3	1200.0	8.932E+01	5.793E+00
Nd-144(p,x)He-4	62.0	6.955E+01	1.612E+01
Nd-144(p,x)He-4	90.0	1.073E+02	2.880E+01
Nd-144(p,x)He-4	150.0	1.358E+02	3.770E+01
Nd-144(p,x)He-4	800.0	7.811E+02	5.061E+01
Nd-144(p,x)He-4	1200.0	1.207E+03	4.344E+01
Nd-145(p,x)H-1	62.0	8.197E+02	2.240E+01
Nd-145(p,x)H-1	90.0	1.222E+03	4.774E+01
Nd-145(p,x)H-1	1200.0	5.480E+03	2.568E+02
Nd-145(p,x)H-2	62.0	1.119E+02	1.679E+01
Nd-145(p,x)H-2	90.0	1.714E+02	2.571E+01
Nd-145(p,x)H-2	1200.0	1.075E+03	5.720E+01
Nd-145(p,x)H-3	62.0	2.719E+01	1.942E+00
Nd-145(p,x)H-3	90.0	4.389E+01	3.705E+00
Nd-145(p,x)H-3	150.0	2.209E+01	2.441E+00
Nd-145(p,x)H-3	660.0	1.476E+02	5.558E+00
Nd-145(p,x)H-3	1200.0	4.068E+02	4.421E+00
Nd-145(p,x)He-3	62.0	4.399E+00	3.455E-01
Nd-145(p,x)He-3	90.0	9.061E+00	8.000E-01
Nd-145(p,x)He-3	150.0	8.985E+00	4.466E-01
Nd-145(p,x)He-3	800.0	6.354E+01	5.838E+00
Nd-145(p,x)He-3	1200.0	8.614E+01	5.638E+00
Nd-145(p,x)He-4	62.0	6.458E+01	2.825E+01

Nd-145(p,x)He-4	90.0	1.003E+02	4.308E+01
Nd-145(p,x)He-4	150.0	1.252E+02	3.844E+01
Nd-145(p,x)He-4	800.0	7.535E+02	5.409E+01
Nd-145(p,x)He-4	1200.0	1.174E+03	4.272E+01
Nd-146(p,x)H-1	62.0	7.868E+02	2.789E+01
Nd-146(p,x)H-1	90.0	1.187E+03	5.068E+01
Nd-146(p,x)H-1	1200.0	5.333E+03	2.649E+02
Nd-146(p,x)H-2	62.0	1.053E+02	1.579E+01
Nd-146(p,x)H-2	90.0	1.643E+02	2.465E+01
Nd-146(p,x)H-2	1200.0	1.067E+03	6.067E+01
Nd-146(p,x)H-3	62.0	2.682E+01	8.891E-01
Nd-146(p,x)H-3	90.0	4.615E+01	1.604E+00
Nd-146(p,x)H-3	150.0	2.284E+01	3.337E+00
Nd-146(p,x)H-3	660.0	1.517E+02	1.124E+01
Nd-146(p,x)H-3	1200.0	4.175E+02	6.914E+00
Nd-146(p,x)He-3	62.0	3.657E+00	3.038E-01
Nd-146(p,x)He-3	90.0	7.885E+00	7.076E-01
Nd-146(p,x)He-3	150.0	8.063E+00	2.632E-01
Nd-146(p,x)He-3	800.0	6.102E+01	5.606E+00
Nd-146(p,x)He-3	1200.0	8.333E+01	5.654E+00
Nd-146(p,x)He-4	62.0	6.051E+01	2.842E+01
Nd-146(p,x)He-4	90.0	9.633E+01	4.176E+01
Nd-146(p,x)He-4	150.0	1.301E+02	4.740E+01
Nd-146(p,x)He-4	800.0	7.266E+02	5.885E+01
Nd-146(p,x)He-4	1200.0	1.142E+03	5.697E+01
Nd-148(p,x)H-1	62.0	7.666E+02	6.293E+01
Nd-148(p,x)H-1	90.0	1.155E+03	6.588E+01
Nd-148(p,x)H-1	1200.0	5.076E+03	2.811E+02
Nd-148(p,x)H-2	62.0	1.029E+02	1.544E+01
Nd-148(p,x)H-2	90.0	1.599E+02	2.399E+01
Nd-148(p,x)H-2	1200.0	1.056E+03	7.521E+01
Nd-148(p,x)H-3	62.0	2.830E+01	1.470E+00
Nd-148(p,x)H-3	90.0	4.878E+01	2.292E+00
Nd-148(p,x)H-3	150.0	2.427E+01	4.101E+00
Nd-148(p,x)H-3	660.0	1.634E+02	2.010E+01
Nd-148(p,x)H-3	1200.0	4.366E+02	1.572E+01
Nd-148(p,x)He-3	62.0	3.221E+00	2.675E-01
Nd-148(p,x)He-3	90.0	7.013E+00	5.674E-01
Nd-148(p,x)He-3	150.0	7.315E+00	2.165E-01
Nd-148(p,x)He-3	800.0	5.692E+01	5.749E+00
Nd-148(p,x)He-3	1200.0	7.782E+01	6.448E+00
Nd-148(p,x)He-4	62.0	5.151E+01	2.630E+01
Nd-148(p,x)He-4	90.0	8.270E+01	4.059E+01
Nd-148(p,x)He-4	150.0	1.163E+02	3.192E+01
Nd-148(p,x)He-4	800.0	6.793E+02	9.745E+01
Nd-148(p,x)He-4	1200.0	1.074E+03	9.471E+01
Nd-150(p,x)H-1	62.0	7.206E+02	3.935E+01
Nd-150(p,x)H-1	90.0	1.115E+03	5.832E+01
Nd-150(p,x)H-1	1200.0	4.850E+03	2.975E+02
Nd-150(p,x)H-2	62.0	9.750E+01	1.462E+01
Nd-150(p,x)H-2	90.0	1.526E+02	2.289E+01
Nd-150(p,x)H-2	1200.0	1.045E+03	8.811E+01
Nd-150(p,x)H-3	62.0	3.229E+01	4.297E+00
Nd-150(p,x)H-3	90.0	4.911E+01	1.806E+00
Nd-150(p,x)H-3	150.0	2.796E+01	3.120E+00
Nd-150(p,x)H-3	660.0	1.741E+02	3.134E+01
Nd-150(p,x)H-3	1200.0	4.592E+02	3.159E+01
Nd-150(p,x)He-3	62.0	2.842E+00	2.191E-01
Nd-150(p,x)He-3	90.0	6.267E+00	4.358E-01
Nd-150(p,x)He-3	150.0	6.548E+00	1.186E-01
Nd-150(p,x)He-3	800.0	5.297E+01	5.354E+00
Nd-150(p,x)He-3	1200.0	7.391E+01	8.208E+00
Nd-150(p,x)He-4	62.0	4.073E+01	1.782E+01
Nd-150(p,x)He-4	90.0	6.530E+01	3.283E+01
Nd-150(p,x)He-4	150.0	9.439E+01	2.750E+01
Nd-150(p,x)He-4	800.0	6.360E+02	1.316E+02
Nd-150(p,x)He-4	1200.0	1.024E+03	1.360E+02
Sm-144(p,x)H-1	62.0	1.263E+03	1.232E+02
Sm-144(p,x)H-1	90.0	1.657E+03	2.281E+01
Sm-144(p,x)H-1	1200.0	6.669E+03	3.321E+02
Sm-144(p,x)H-2	62.0	9.802E+01	1.470E+01
Sm-144(p,x)H-2	90.0	1.591E+02	2.387E+01
Sm-144(p,x)H-2	1200.0	1.115E+03	9.471E+00
Sm-144(p,x)H-3	62.0	1.552E+01	1.173E+00
Sm-144(p,x)H-3	90.0	2.874E+01	4.438E+00
Sm-144(p,x)H-3	150.0	1.675E+01	1.631E+00
Sm-144(p,x)H-3	660.0	1.301E+02	2.070E+00
Sm-144(p,x)H-3	1200.0	3.615E+02	1.180E+01
Sm-144(p,x)He-3	62.0	4.179E+00	5.395E-02
Sm-144(p,x)He-3	90.0	9.417E+00	6.176E-02
Sm-144(p,x)He-3	150.0	1.014E+01	3.931E-01
Sm-144(p,x)He-3	800.0	7.800E+01	4.806E+00
Sm-144(p,x)He-3	1200.0	1.044E+02	3.998E+00
Sm-144(p,x)He-4	62.0	1.093E+02	7.497E+00
Sm-144(p,x)He-4	90.0	1.564E+02	5.146E+00
Sm-144(p,x)He-4	150.0	1.744E+02	2.533E+01
Sm-144(p,x)He-4	800.0	9.557E+02	1.341E+02
Sm-144(p,x)He-4	1200.0	1.421E+03	1.549E+02
Sm-147(p,x)H-1	62.0	9.754E+02	1.786E+01
Sm-147(p,x)H-1	90.0	1.410E+03	4.728E+01
Sm-147(p,x)H-1	1200.0	6.100E+03	2.696E+02
Sm-147(p,x)H-2	62.0	1.150E+02	1.725E+01
Sm-147(p,x)H-2	90.0	1.781E+02	2.671E+01
Sm-147(p,x)H-2	1200.0	1.098E+03	1.538E+01
Sm-147(p,x)H-3	62.0	2.369E+01	1.495E+00
Sm-147(p,x)H-3	90.0	3.997E+01	2.251E+00
Sm-147(p,x)H-3	150.0	2.155E+01	1.490E+00
Sm-147(p,x)H-3	660.0	1.384E+02	1.632E+00
Sm-147(p,x)H-3	1200.0	3.826E+02	1.457E+01
Sm-147(p,x)He-3	62.0	4.835E+00	3.281E-01
Sm-147(p,x)He-3	90.0	1.001E+01	6.600E-01
Sm-147(p,x)He-3	150.0	1.013E+01	2.333E-01
Sm-147(p,x)He-3	800.0	6.769E+01	3.356E+00
Sm-147(p,x)He-3	1200.0	9.379E+01	3.986E+00
Sm-147(p,x)He-4	62.0	9.250E+01	2.852E+01
Sm-147(p,x)He-4	90.0	1.454E+02	4.254E+01
Sm-147(p,x)He-4	150.0	1.597E+02	3.550E+01
Sm-147(p,x)He-4	800.0	8.509E+02	7.865E+01
Sm-147(p,x)He-4	1200.0	1.311E+03	8.603E+01
Sm-148(p,x)H-1	62.0	8.803E+02	1.164E+01
Sm-148(p,x)H-1	90.0	1.340E+03	6.122E+01
Sm-148(p,x)H-1	1200.0	5.924E+03	2.523E+02
Sm-148(p,x)H-2	62.0	1.065E+02	1.598E+01
Sm-148(p,x)H-2	90.0	1.687E+02	2.531E+01
Sm-148(p,x)H-2	1200.0	1.089E+03	2.089E+01
Sm-148(p,x)H-3	62.0	2.382E+01	7.710E-01
Sm-148(p,x)H-3	90.0	4.193E+01	1.145E-01
Sm-148(p,x)H-3	150.0	2.220E+01	2.331E+00
Sm-148(p,x)H-3	660.0	1.423E+02	8.667E-01
Sm-148(p,x)H-3	1200.0	3.905E+02	1.461E+01
Sm-148(p,x)He-3	62.0	3.954E+00	1.985E-01
Sm-148(p,x)He-3	90.0	8.587E+00	4.043E-01
Sm-148(p,x)He-3	150.0	9.047E+00	1.470E-01
Sm-148(p,x)He-3	800.0	6.602E+01	4.004E+00
Sm-148(p,x)He-3	1200.0	9.100E+01	4.512E+00
Sm-148(p,x)He-4	62.0	8.422E+01	3.233E+01
Sm-148(p,x)He-4	90.0	1.354E+02	4.126E+01
Sm-148(p,x)He-4	150.0	1.596E+02	3.590E+01
Sm-148(p,x)He-4	800.0	8.237E+02	5.829E+01
Sm-148(p,x)He-4	1200.0	1.269E+03	5.735E+01
Sm-149(p,x)H-1	62.0	8.389E+02	3.229E+01
Sm-149(p,x)H-1	90.0	1.292E+03	6.411E+01
Sm-149(p,x)H-1	1200.0	5.764E+03	2.294E+02
Sm-149(p,x)H-2	62.0	1.133E+02	1.699E+01
Sm-149(p,x)H-2	90.0	1.745E+02	2.618E+01
Sm-149(p,x)H-2	1200.0	1.093E+03	3.049E+01
Sm-149(p,x)H-3	62.0	2.573E+01	1.664E+00
Sm-149(p,x)H-3	90.0	4.311E+01	3.464E+00
Sm-149(p,x)H-3	150.0	2.298E+01	2.983E+00
Sm-149(p,x)H-3	660.0	1.499E+02	5.303E+00
Sm-149(p,x)H-3	1200.0	4.028E+02	7.274E+00
Sm-149(p,x)He-3	62.0	4.471E+00	3.388E-01
Sm-149(p,x)He-3	90.0	9.242E+00	7.316E-01
Sm-149(p,x)He-3	150.0	9.226E+00	2.148E-01
Sm-149(p,x)He-3	800.0	6.398E+01	4.076E+00
Sm-149(p,x)He-3	1200.0	8.747E+01	3.997E+00
Sm-149(p,x)He-4	62.0	7.669E+01	3.489E+01
Sm-149(p,x)He-4	90.0	1.204E+02	5.059E+01
Sm-149(p,x)He-4	150.0	1.439E+02	4.385E+01
Sm-149(p,x)He-4	800.0	7.987E+02	5.374E+01
Sm-149(p,x)He-4	1200.0	1.240E+03	4.245E+01
Sm-150(p,x)H-1	62.0	8.088E+02	3.749E+01
Sm-150(p,x)H-1	90.0	1.241E+03	6.395E+01
Sm-150(p,x)H-1	1200.0	5.618E+03	2.155E+02
Sm-150(p,x)H-2	62.0	1.045E+02	1.568E+01
Sm-150(p,x)H-2	90.0	1.654E+02	2.481E+01
Sm-150(p,x)H-2	1200.0	1.085E+03	3.926E+01
Sm-150(p,x)H-3	62.0	2.543E+01	7.876E-01
Sm-150(p,x)H-3	90.0	4.472E+01	3.117E-01
Sm-150(p,x)H-3	150.0	2.331E+01	3.319E+00

Sm-150(p,x)H-3	660.0	1.541E+02	1.024E+01
Sm-150(p,x)H-3	1200.0	4.154E+02	2.425E+00
Sm-150(p,x)He-3	62.0	3.609E+00	2.724E-01
Sm-150(p,x)He-3	90.0	7.867E+00	5.360E-01
Sm-150(p,x)He-3	150.0	8.168E+00	1.157E-01
Sm-150(p,x)He-3	800.0	6.167E+01	5.367E+00
Sm-150(p,x)He-3	1200.0	8.492E+01	4.982E+00
Sm-150(p,x)He-4	62.0	7.112E+01	2.795E+01
Sm-150(p,x)He-4	90.0	1.100E+02	4.540E+01
Sm-150(p,x)He-4	150.0	1.331E+02	4.021E+01
Sm-150(p,x)He-4	800.0	7.730E+02	6.205E+01
Sm-150(p,x)He-4	1200.0	1.214E+03	3.533E+01
Sm-152(p,x)H-1	62.0	7.434E+02	2.782E+01
Sm-152(p,x)H-1	90.0	1.157E+03	4.913E+01
Sm-152(p,x)H-1	1200.0	5.330E+03	2.061E+02
Sm-152(p,x)H-2	62.0	9.652E+01	1.448E+01
Sm-152(p,x)H-2	90.0	1.547E+02	2.320E+01
Sm-152(p,x)H-2	1200.0	1.078E+03	5.828E+01
Sm-152(p,x)H-3	62.0	2.519E+01	1.070E+00
Sm-152(p,x)H-3	90.0	4.458E+01	5.011E-01
Sm-152(p,x)H-3	150.0	2.377E+01	3.024E+00
Sm-152(p,x)H-3	660.0	1.645E+02	2.293E+01
Sm-152(p,x)H-3	1200.0	4.403E+02	1.005E+01
Sm-152(p,x)He-3	62.0	3.020E+00	1.852E-01
Sm-152(p,x)He-3	90.0	6.768E+00	3.265E-01
Sm-152(p,x)He-3	150.0	7.375E+00	4.420E-01
Sm-152(p,x)He-3	800.0	5.730E+01	3.991E+00
Sm-152(p,x)He-3	1200.0	8.031E+01	5.885E+00
Sm-152(p,x)He-4	62.0	5.332E+01	2.184E+01
Sm-152(p,x)He-4	90.0	8.600E+01	3.479E+01
Sm-152(p,x)He-4	150.0	1.141E+02	3.446E+01
Sm-152(p,x)He-4	800.0	7.244E+02	9.374E+01
Sm-152(p,x)He-4	1200.0	1.150E+03	6.886E+01
Sm-154(p,x)H-1	62.0	7.319E+02	4.928E+01
Sm-154(p,x)H-1	90.0	1.135E+03	5.699E+01
Sm-154(p,x)H-1	1200.0	5.083E+03	2.284E+02
Sm-154(p,x)H-2	62.0	9.236E+01	1.385E+01
Sm-154(p,x)H-2	90.0	1.483E+02	2.225E+01
Sm-154(p,x)H-2	1200.0	1.067E+03	7.040E+01
Sm-154(p,x)H-3	62.0	3.216E+01	1.170E+01
Sm-154(p,x)H-3	90.0	4.369E+01	1.699E+00
Sm-154(p,x)H-3	150.0	2.814E+01	5.790E+00
Sm-154(p,x)H-3	660.0	1.706E+02	3.025E+01
Sm-154(p,x)H-3	1200.0	4.612E+02	2.765E+01
Sm-154(p,x)He-3	62.0	2.799E+00	1.779E-01
Sm-154(p,x)He-3	90.0	6.330E+00	2.425E-01
Sm-154(p,x)He-3	150.0	6.998E+00	3.547E-01
Sm-154(p,x)He-3	800.0	5.465E+01	4.181E+00
Sm-154(p,x)He-3	1200.0	7.501E+01	5.790E+00
Sm-154(p,x)He-4	62.0	6.262E+01	2.309E+01
Sm-154(p,x)He-4	90.0	1.066E+02	4.864E+01
Sm-154(p,x)He-4	150.0	1.206E+02	5.167E+01
Sm-154(p,x)He-4	800.0	6.733E+02	1.323E+02
Sm-154(p,x)He-4	1200.0	1.097E+03	1.209E+02
Eu-151(p,x)H-1	62.0	7.871E+02	4.646E+01
Eu-151(p,x)H-1	90.0	1.257E+03	7.531E+01
Eu-151(p,x)H-1	1200.0	5.905E+03	2.242E+02
Eu-151(p,x)H-2	62.0	9.680E+01	1.452E+01
Eu-151(p,x)H-2	90.0	1.591E+02	2.386E+01
Eu-151(p,x)H-2	1200.0	1.104E+03	1.552E+01
Eu-151(p,x)H-3	62.0	2.409E+01	2.011E+00
Eu-151(p,x)H-3	90.0	4.082E+01	1.647E+00
Eu-151(p,x)H-3	150.0	2.317E+01	2.946E+00
Eu-151(p,x)H-3	660.0	1.501E+02	6.162E+00
Eu-151(p,x)H-3	1200.0	4.062E+02	1.612E+01
Eu-151(p,x)He-3	62.0	4.391E+00	4.137E-01
Eu-151(p,x)He-3	90.0	9.050E+00	6.530E-01
Eu-151(p,x)He-3	150.0	9.189E+00	8.119E-01
Eu-151(p,x)He-3	800.0	6.532E+01	4.188E+00
Eu-151(p,x)He-3	1200.0	8.894E+01	3.221E+00
Eu-151(p,x)He-4	62.0	9.055E+01	3.927E+01
Eu-151(p,x)He-4	90.0	1.291E+02	5.227E+01
Eu-151(p,x)He-4	150.0	1.495E+02	5.152E+01
Eu-151(p,x)He-4	800.0	8.289E+02	5.095E+01
Eu-151(p,x)He-4	1200.0	1.280E+03	4.756E+01
Eu-153(p,x)H-1	62.0	7.361E+02	3.263E+01
Eu-153(p,x)H-1	90.0	1.174E+03	5.786E+01
Eu-153(p,x)H-1	1200.0	5.600E+03	1.771E+02
Eu-153(p,x)H-2	62.0	8.899E+01	1.335E+01
Eu-153(p,x)H-2	90.0	1.479E+02	2.219E+01
Eu-153(p,x)H-2	1200.0	1.093E+03	3.316E+01
Eu-153(p,x)H-3	62.0	2.329E+01	2.202E+00
Eu-153(p,x)H-3	90.0	3.954E+01	1.558E+00
Eu-153(p,x)H-3	150.0	2.297E+01	2.817E+00
Eu-153(p,x)H-3	660.0	1.604E+02	1.673E+01
Eu-153(p,x)H-3	1200.0	4.261E+02	6.269E+00
Eu-153(p,x)He-3	62.0	3.651E+00	3.088E-01
Eu-153(p,x)He-3	90.0	7.757E+00	5.353E-01
Eu-153(p,x)He-3	150.0	8.130E+00	7.071E-01
Eu-153(p,x)He-3	800.0	6.047E+01	2.897E+00
Eu-153(p,x)He-3	1200.0	8.310E+01	3.203E+00
Eu-153(p,x)He-4	62.0	6.565E+01	2.639E+01
Eu-153(p,x)He-4	90.0	1.004E+02	4.114E+01
Eu-153(p,x)He-4	150.0	1.250E+02	4.585E+01
Eu-153(p,x)He-4	800.0	7.755E+02	7.213E+01
Eu-153(p,x)He-4	1200.0	1.220E+03	3.568E+01
Gd-152(p,x)H-1	62.0	9.095E+02	2.969E+01
Gd-152(p,x)H-1	90.0	1.397E+03	7.606E+01
Gd-152(p,x)H-1	1200.0	6.245E+03	2.431E+02
Gd-152(p,x)H-2	62.0	1.060E+02	1.590E+01
Gd-152(p,x)H-2	90.0	1.704E+02	2.555E+01
Gd-152(p,x)H-2	1200.0	1.126E+03	6.980E+00
Gd-152(p,x)H-3	62.0	2.260E+01	7.284E-01
Gd-152(p,x)H-3	90.0	4.075E+01	4.763E-01
Gd-152(p,x)H-3	150.0	2.218E+01	2.819E+00
Gd-152(p,x)H-3	660.0	1.479E+02	7.897E-01
Gd-152(p,x)H-3	1200.0	3.977E+02	2.042E+01
Gd-152(p,x)He-3	62.0	3.888E+00	1.915E-01
Gd-152(p,x)He-3	90.0	8.535E+00	2.786E-01
Gd-152(p,x)He-3	150.0	9.169E+00	1.173E-01
Gd-152(p,x)He-3	800.0	6.775E+01	2.580E+00
Gd-152(p,x)He-3	1200.0	9.461E+01	4.211E+00
Gd-152(p,x)He-4	62.0	1.048E+02	4.647E+01
Gd-152(p,x)He-4	90.0	1.450E+02	6.360E+01
Gd-152(p,x)He-4	150.0	1.553E+02	6.433E+01
Gd-152(p,x)He-4	800.0	8.914E+02	6.212E+01
Gd-152(p,x)He-4	1200.0	1.363E+03	9.467E+01
Gd-154(p,x)H-1	62.0	8.103E+02	2.589E+01
Gd-154(p,x)H-1	90.0	1.263E+03	6.776E+01
Gd-154(p,x)H-1	1200.0	5.898E+03	1.627E+02
Gd-154(p,x)H-2	62.0	9.831E+01	1.475E+01
Gd-154(p,x)H-2	90.0	1.588E+02	2.382E+01
Gd-154(p,x)H-2	1200.0	1.113E+03	1.490E+01
Gd-154(p,x)H-3	62.0	2.262E+01	5.271E-01
Gd-154(p,x)H-3	90.0	4.042E+01	1.945E+00
Gd-154(p,x)H-3	150.0	2.257E+01	2.771E+00
Gd-154(p,x)H-3	660.0	1.568E+02	1.106E+01
Gd-154(p,x)H-3	1200.0	4.212E+02	8.139E+00
Gd-154(p,x)He-3	62.0	3.286E+00	1.060E-01
Gd-154(p,x)He-3	90.0	7.418E+00	3.920E-02
Gd-154(p,x)He-3	150.0	8.166E+00	2.997E-01
Gd-154(p,x)He-3	800.0	6.335E+01	1.869E+00
Gd-154(p,x)He-3	1200.0	8.736E+01	3.154E+00
Gd-154(p,x)He-4	62.0	7.994E+01	2.799E+01
Gd-154(p,x)He-4	90.0	1.139E+02	4.301E+01
Gd-154(p,x)He-4	150.0	1.303E+02	5.700E+01
Gd-154(p,x)He-4	800.0	8.394E+02	5.263E+01
Gd-154(p,x)He-4	1200.0	1.298E+03	4.233E+01
Gd-155(p,x)H-1	62.0	7.912E+02	2.797E+01
Gd-155(p,x)H-1	90.0	1.226E+03	6.164E+01
Gd-155(p,x)H-1	1200.0	5.753E+03	1.549E+02
Gd-155(p,x)H-2	62.0	1.041E+02	1.561E+01
Gd-155(p,x)H-2	90.0	1.625E+02	2.438E+01
Gd-155(p,x)H-2	1200.0	1.110E+03	2.431E+01
Gd-155(p,x)H-3	62.0	2.347E+01	2.473E+00
Gd-155(p,x)H-3	90.0	3.947E+01	6.067E-01
Gd-155(p,x)H-3	150.0	2.371E+01	1.964E+00
Gd-155(p,x)H-3	660.0	1.615E+02	1.574E+01
Gd-155(p,x)H-3	1200.0	4.308E+02	5.480E+00
Gd-155(p,x)He-3	62.0	3.824E+00	2.621E-01
Gd-155(p,x)He-3	90.0	8.092E+00	5.186E-01
Gd-155(p,x)He-3	150.0	8.376E+00	2.706E-01
Gd-155(p,x)He-3	800.0	6.045E+01	1.679E+00
Gd-155(p,x)He-3	1200.0	8.444E+01	2.561E+00
Gd-155(p,x)He-4	62.0	6.804E+01	1.642E+01
Gd-155(p,x)He-4	90.0	1.056E+02	3.230E+01
Gd-155(p,x)He-4	150.0	1.214E+02	4.635E+01
Gd-155(p,x)He-4	800.0	8.119E+02	6.702E+01
Gd-155(p,x)He-4	1200.0	1.266E+03	3.486E+01
Gd-156(p,x)H-1	62.0	7.567E+02	2.790E+01

Gd-156(p,x)H-1	90.0	1.188E+03	5.242E+01
Gd-156(p,x)H-1	1200.0	5.591E+03	1.401E+02
Gd-156(p,x)H-2	62.0	9.429E+01	1.414E+01
Gd-156(p,x)H-2	90.0	1.528E+02	2.292E+01
Gd-156(p,x)H-2	1200.0	1.104E+03	3.330E+01
Gd-156(p,x)H-3	62.0	2.305E+01	1.104E+00
Gd-156(p,x)H-3	90.0	4.052E+01	3.429E+00
Gd-156(p,x)H-3	150.0	2.401E+01	1.308E+00
Gd-156(p,x)H-3	660.0	1.649E+02	1.996E+01
Gd-156(p,x)H-3	1200.0	4.433E+02	5.788E+00
Gd-156(p,x)He-3	62.0	3.072E+00	1.489E-01
Gd-156(p,x)He-3	90.0	6.873E+00	1.544E-01
Gd-156(p,x)He-3	150.0	7.501E+00	3.215E-01
Gd-156(p,x)He-3	800.0	5.891E+01	2.161E+00
Gd-156(p,x)He-3	1200.0	8.219E+01	3.296E+00
Gd-156(p,x)He-4	62.0	5.254E+01	1.176E+01
Gd-156(p,x)He-4	90.0	8.987E+01	1.836E+01
Gd-156(p,x)He-4	150.0	1.167E+02	2.999E+01
Gd-156(p,x)He-4	800.0	7.747E+02	8.058E+01
Gd-156(p,x)He-4	1200.0	1.228E+03	4.433E+01
Gd-157(p,x)H-1	62.0	7.462E+02	2.380E+01
Gd-157(p,x)H-1	90.0	1.172E+03	4.972E+01
Gd-157(p,x)H-1	1200.0	5.449E+03	1.131E+02
Gd-157(p,x)H-2	62.0	9.965E+01	1.495E+01
Gd-157(p,x)H-2	90.0	1.567E+02	2.351E+01
Gd-157(p,x)H-2	1200.0	1.088E+03	2.485E+01
Gd-157(p,x)H-3	62.0	2.374E+01	1.713E+00
Gd-157(p,x)H-3	90.0	4.011E+01	5.042E-01
Gd-157(p,x)H-3	150.0	2.481E+01	2.588E+00
Gd-157(p,x)H-3	660.0	1.653E+02	2.004E+01
Gd-157(p,x)H-3	1200.0	4.493E+02	3.867E+00
Gd-157(p,x)He-3	62.0	3.484E+00	2.457E-01
Gd-157(p,x)He-3	90.0	7.421E+00	4.754E-01
Gd-157(p,x)He-3	150.0	7.750E+00	2.944E-01
Gd-157(p,x)He-3	800.0	5.749E+01	1.487E+00
Gd-157(p,x)He-3	1200.0	7.809E+01	2.595E+00
Gd-157(p,x)He-4	62.0	4.232E+01	1.124E+01
Gd-157(p,x)He-4	90.0	7.848E+01	1.689E+01
Gd-157(p,x)He-4	150.0	1.096E+02	2.423E+01
Gd-157(p,x)He-4	800.0	7.443E+02	9.195E+01
Gd-157(p,x)He-4	1200.0	1.186E+03	5.657E+01
Gd-158(p,x)H-1	62.0	7.211E+02	2.883E+01
Gd-158(p,x)H-1	90.0	1.146E+03	4.697E+01
Gd-158(p,x)H-1	1200.0	5.320E+03	1.361E+02
Gd-158(p,x)H-2	62.0	9.361E+01	1.404E+01
Gd-158(p,x)H-2	90.0	1.509E+02	2.263E+01
Gd-158(p,x)H-2	1200.0	1.084E+03	4.116E+01
Gd-158(p,x)H-3	62.0	2.370E+01	1.296E+00
Gd-158(p,x)H-3	90.0	4.227E+01	3.657E+00
Gd-158(p,x)H-3	150.0	2.478E+01	1.033E+00
Gd-158(p,x)H-3	660.0	1.676E+02	2.386E+01
Gd-158(p,x)H-3	1200.0	4.644E+02	1.726E+01
Gd-158(p,x)He-3	62.0	2.925E+00	1.898E-01
Gd-158(p,x)He-3	90.0	6.464E+00	2.314E-01
Gd-158(p,x)He-3	150.0	7.084E+00	1.273E-01
Gd-158(p,x)He-3	800.0	5.480E+01	7.735E-01
Gd-158(p,x)He-3	1200.0	7.655E+01	3.569E+00
Gd-158(p,x)He-4	62.0	3.535E+01	1.192E+01
Gd-158(p,x)He-4	90.0	6.652E+01	1.381E+01
Gd-158(p,x)He-4	150.0	1.021E+02	1.681E+01
Gd-158(p,x)He-4	800.0	7.048E+02	9.809E+01
Gd-158(p,x)He-4	1200.0	1.155E+03	8.509E+01
Gd-160(p,x)H-1	62.0	7.048E+02	2.968E+01
Gd-160(p,x)H-1	90.0	1.130E+03	4.553E+01
Gd-160(p,x)H-1	1200.0	5.081E+03	1.744E+02
Gd-160(p,x)H-2	62.0	9.333E+01	1.400E+01
Gd-160(p,x)H-2	90.0	1.486E+02	2.228E+01
Gd-160(p,x)H-2	1200.0	1.067E+03	4.439E+01
Gd-160(p,x)H-3	62.0	2.572E+01	1.321E+00
Gd-160(p,x)H-3	90.0	4.496E+01	2.649E+00
Gd-160(p,x)H-3	150.0	2.544E+01	2.858E-01
Gd-160(p,x)H-3	660.0	1.669E+02	2.317E+01
Gd-160(p,x)H-3	1200.0	4.731E+02	2.180E+01
Gd-160(p,x)He-3	62.0	2.713E+00	2.274E-01
Gd-160(p,x)He-3	90.0	6.018E+00	2.772E-01
Gd-160(p,x)He-3	150.0	6.628E+00	2.111E-01
Gd-160(p,x)He-3	800.0	4.992E+01	4.719E-01
Gd-160(p,x)He-3	1200.0	7.007E+01	2.504E+00
Gd-160(p,x)He-4	62.0	3.758E+01	6.964E+00
Gd-160(p,x)He-4	90.0	6.524E+01	1.178E+01
Gd-160(p,x)He-4	150.0	9.410E+01	2.063E+01
Gd-160(p,x)He-4	800.0	6.382E+02	1.062E+02
Gd-160(p,x)He-4	1200.0	1.075E+03	1.068E+02
Tb-159(p,x)H-1	62.0	7.542E+02	6.384E+01
Tb-159(p,x)H-1	90.0	1.190E+03	6.789E+01
Tb-159(p,x)H-1	1200.0	5.576E+03	6.829E+01
Tb-159(p,x)H-2	62.0	8.964E+01	1.345E+01
Tb-159(p,x)H-2	90.0	1.479E+02	2.218E+01
Tb-159(p,x)H-2	1200.0	1.107E+03	2.017E+01
Tb-159(p,x)H-3	62.0	2.622E+01	7.027E+00
Tb-159(p,x)H-3	90.0	3.835E+01	3.478E+00
Tb-159(p,x)H-3	150.0	2.432E+01	8.672E-01
Tb-159(p,x)H-3	660.0	1.646E+02	2.041E+01
Tb-159(p,x)H-3	1200.0	4.533E+02	2.882E+00
Tb-159(p,x)He-3	62.0	3.386E+00	2.193E-01
Tb-159(p,x)He-3	90.0	7.212E+00	4.638E-01
Tb-159(p,x)He-3	150.0	7.671E+00	6.727E-01
Tb-159(p,x)He-3	800.0	5.755E+01	7.436E-01
Tb-159(p,x)He-3	1200.0	8.049E+01	1.424E+00
Tb-159(p,x)He-4	62.0	5.090E+01	7.138E+00
Tb-159(p,x)He-4	90.0	8.462E+01	2.054E+01
Tb-159(p,x)He-4	150.0	1.071E+02	2.409E+01
Tb-159(p,x)He-4	800.0	7.658E+02	6.653E+01
Tb-159(p,x)He-4	1200.0	1.228E+03	3.827E+01
Dy-156(p,x)H-1	62.0	9.300E+02	1.079E+01
Dy-156(p,x)H-1	90.0	1.420E+03	8.072E+01
Dy-156(p,x)H-1	1200.0	6.554E+03	2.577E+02
Dy-156(p,x)H-2	62.0	1.013E+02	1.519E+01
Dy-156(p,x)H-2	90.0	1.649E+02	2.473E+01
Dy-156(p,x)H-2	1200.0	1.154E+03	1.344E+01
Dy-156(p,x)H-3	62.0	2.012E+01	5.330E-01
Dy-156(p,x)H-3	90.0	3.701E+01	2.731E+00
Dy-156(p,x)H-3	150.0	2.185E+01	2.083E+00
Dy-156(p,x)H-3	660.0	1.502E+02	8.153E-01
Dy-156(p,x)H-3	1200.0	4.062E+02	2.448E+01
Dy-156(p,x)He-3	62.0	3.651E+00	1.392E-01
Dy-156(p,x)He-3	90.0	8.236E+00	4.142E-02
Dy-156(p,x)He-3	150.0	9.117E+00	5.089E-01
Dy-156(p,x)He-3	800.0	7.096E+01	9.598E-01
Dy-156(p,x)He-3	1200.0	9.625E+01	3.885E-01
Dy-156(p,x)He-4	62.0	1.392E+02	2.243E+01
Dy-156(p,x)He-4	90.0	1.795E+02	4.484E+01
Dy-156(p,x)He-4	150.0	1.858E+02	7.421E+01
Dy-156(p,x)He-4	800.0	9.653E+02	6.545E+01
Dy-156(p,x)He-4	1200.0	1.458E+03	1.356E+02
Dy-158(p,x)H-1	62.0	8.481E+02	1.741E+01
Dy-158(p,x)H-1	90.0	1.319E+03	6.256E+01
Dy-158(p,x)H-1	1200.0	6.182E+03	1.666E+02
Dy-158(p,x)H-2	62.0	9.821E+01	1.473E+01
Dy-158(p,x)H-2	90.0	1.600E+02	2.401E+01
Dy-158(p,x)H-2	1200.0	1.140E+03	3.978E+00
Dy-158(p,x)H-3	62.0	2.047E+01	7.902E-01
Dy-158(p,x)H-3	90.0	3.740E+01	3.541E+00
Dy-158(p,x)H-3	150.0	2.182E+01	1.739E+00
Dy-158(p,x)H-3	660.0	1.568E+02	1.100E+01
Dy-158(p,x)H-3	1200.0	4.255E+02	1.189E+01
Dy-158(p,x)He-3	62.0	3.425E+00	1.828E-01
Dy-158(p,x)He-3	90.0	7.662E+00	1.466E-01
Dy-158(p,x)He-3	150.0	8.493E+00	3.473E-01
Dy-158(p,x)He-3	800.0	6.564E+01	9.846E+00
Dy-158(p,x)He-3	1200.0	9.077E+01	2.266E+00
Dy-158(p,x)He-4	62.0	7.737E+01	1.186E+01
Dy-158(p,x)He-4	90.0	1.385E+02	1.582E+01
Dy-158(p,x)He-4	150.0	1.556E+02	4.070E+01
Dy-158(p,x)He-4	800.0	8.975E+02	3.800E+01
Dy-158(p,x)He-4	1200.0	1.384E+03	7.711E+01
Dy-160(p,x)H-1	62.0	7.857E+02	2.112E+01
Dy-160(p,x)H-1	90.0	1.250E+03	5.521E+01
Dy-160(p,x)H-1	1200.0	5.868E+03	9.272E+01
Dy-160(p,x)H-2	62.0	9.731E+01	1.460E+01
Dy-160(p,x)H-2	90.0	1.579E+02	2.368E+01
Dy-160(p,x)H-2	1200.0	1.124E+03	9.127E+00
Dy-160(p,x)H-3	62.0	2.187E+01	7.450E-01
Dy-160(p,x)H-3	90.0	3.929E+01	3.303E+00
Dy-160(p,x)H-3	150.0	2.350E+01	6.095E-01
Dy-160(p,x)H-3	660.0	1.613E+02	1.454E+01
Dy-160(p,x)H-3	1200.0	4.473E+02	1.160E+00
Dy-160(p,x)He-3	62.0	3.241E+00	2.270E-01
Dy-160(p,x)He-3	90.0	7.187E+00	2.326E-01
Dy-160(p,x)He-3	150.0	7.845E+00	3.453E-01

Dy-160(p,x)He-3	800.0	6.098E+01	3.814E-01
Dy-160(p,x)He-3	1200.0	8.520E+01	2.069E+00
Dy-160(p,x)He-4	62.0	5.251E+01	9.539E+00
Dy-160(p,x)He-4	90.0	9.722E+01	6.697E+00
Dy-160(p,x)He-4	150.0	1.247E+02	2.513E+01
Dy-160(p,x)He-4	800.0	8.238E+02	4.113E+01
Dy-160(p,x)He-4	1200.0	1.307E+03	3.324E+01
Dy-161(p,x)H-1	62.0	7.695E+02	2.175E+01
Dy-161(p,x)H-1	90.0	1.228E+03	5.757E+01
Dy-161(p,x)H-1	1200.0	5.723E+03	4.838E+01
Dy-161(p,x)H-2	62.0	1.026E+02	1.540E+01
Dy-161(p,x)H-2	90.0	1.619E+02	2.429E+01
Dy-161(p,x)H-2	1200.0	1.120E+03	1.767E+01
Dy-161(p,x)H-3	62.0	2.277E+01	8.573E-01
Dy-161(p,x)H-3	90.0	3.982E+01	5.548E-01
Dy-161(p,x)H-3	150.0	2.466E+01	1.030E+00
Dy-161(p,x)H-3	660.0	1.622E+02	1.464E+01
Dy-161(p,x)H-3	1200.0	4.540E+02	7.502E-01
Dy-161(p,x)He-3	62.0	3.603E+00	2.657E-01
Dy-161(p,x)He-3	90.0	7.608E+00	4.695E-01
Dy-161(p,x)He-3	150.0	8.142E+00	2.310E-01
Dy-161(p,x)He-3	800.0	5.748E+01	1.338E+00
Dy-161(p,x)He-3	1200.0	8.132E+01	1.616E+00
Dy-161(p,x)He-4	62.0	4.608E+01	1.292E+01
Dy-161(p,x)He-4	90.0	8.027E+01	1.499E+01
Dy-161(p,x)He-4	150.0	1.075E+02	2.254E+01
Dy-161(p,x)He-4	800.0	7.847E+02	4.617E+01
Dy-161(p,x)He-4	1200.0	1.267E+03	2.508E+01
Dy-162(p,x)H-1	62.0	7.406E+02	2.722E+01
Dy-162(p,x)H-1	90.0	1.193E+03	4.878E+01
Dy-162(p,x)H-1	1200.0	5.571E+03	3.286E+01
Dy-162(p,x)H-2	62.0	9.477E+01	1.422E+01
Dy-162(p,x)H-2	90.0	1.541E+02	2.312E+01
Dy-162(p,x)H-2	1200.0	1.108E+03	1.145E+01
Dy-162(p,x)H-3	62.0	2.299E+01	8.735E-01
Dy-162(p,x)H-3	90.0	4.149E+01	3.228E+00
Dy-162(p,x)H-3	150.0	2.498E+01	1.326E+00
Dy-162(p,x)H-3	660.0	1.634E+02	1.497E+01
Dy-162(p,x)H-3	1200.0	4.598E+02	3.441E+00
Dy-162(p,x)He-3	62.0	2.976E+00	2.202E-01
Dy-162(p,x)He-3	90.0	6.589E+00	2.046E-01
Dy-162(p,x)He-3	150.0	7.332E+00	1.434E-01
Dy-162(p,x)He-3	800.0	5.650E+01	1.874E+00
Dy-162(p,x)He-3	1200.0	7.849E+01	1.939E+00
Dy-162(p,x)He-4	62.0	4.139E+01	1.061E+01
Dy-162(p,x)He-4	90.0	7.023E+01	1.121E+01
Dy-162(p,x)He-4	150.0	9.747E+01	1.737E+01
Dy-162(p,x)He-4	800.0	7.425E+02	4.960E+01
Dy-162(p,x)He-4	1200.0	1.222E+03	2.449E+01
Dy-163(p,x)H-1	62.0	7.331E+02	2.517E+01
Dy-163(p,x)H-1	90.0	1.178E+03	5.068E+01
Dy-163(p,x)H-1	1200.0	5.441E+03	3.878E+01
Dy-163(p,x)H-2	62.0	9.918E+01	1.488E+01
Dy-163(p,x)H-2	90.0	1.567E+02	2.351E+01
Dy-163(p,x)H-2	1200.0	1.100E+03	1.334E+01
Dy-163(p,x)H-3	62.0	2.386E+01	9.171E-01
Dy-163(p,x)H-3	90.0	4.140E+01	1.008E-01
Dy-163(p,x)H-3	150.0	2.506E+01	1.357E+00
Dy-163(p,x)H-3	660.0	1.621E+02	1.411E+01
Dy-163(p,x)H-3	1200.0	4.675E+02	9.532E+00
Dy-163(p,x)He-3	62.0	3.257E+00	2.514E-01
Dy-163(p,x)He-3	90.0	6.956E+00	4.211E-01
Dy-163(p,x)He-3	150.0	7.531E+00	2.056E-01
Dy-163(p,x)He-3	800.0	5.396E+01	7.780E-01
Dy-163(p,x)He-3	1200.0	7.491E+01	1.375E-01
Dy-163(p,x)He-4	62.0	3.558E+01	1.297E+01
Dy-163(p,x)He-4	90.0	6.011E+01	1.582E+01
Dy-163(p,x)He-4	150.0	8.593E+01	1.778E+01
Dy-163(p,x)He-4	800.0	7.064E+02	4.704E+01
Dy-163(p,x)He-4	1200.0	1.180E+03	3.837E+01
Dy-164(p,x)H-1	62.0	7.093E+02	3.113E+01
Dy-164(p,x)H-1	90.0	1.151E+03	4.754E+01
Dy-164(p,x)H-1	1200.0	5.322E+03	7.607E+01
Dy-164(p,x)H-2	62.0	9.428E+01	1.414E+01
Dy-164(p,x)H-2	90.0	1.520E+02	2.280E+01
Dy-164(p,x)H-2	1200.0	1.092E+03	1.898E+01
Dy-164(p,x)H-3	62.0	2.411E+01	1.259E+00
Dy-164(p,x)H-3	90.0	4.361E+01	3.166E+00
Dy-164(p,x)H-3	150.0	2.507E+01	1.590E+00
Dy-164(p,x)H-3	660.0	1.644E+02	1.577E+01
Dy-164(p,x)H-3	1200.0	4.736E+02	9.460E+00
Dy-164(p,x)He-3	62.0	2.804E+00	2.490E-01
Dy-164(p,x)He-3	90.0	6.176E+00	2.512E-01
Dy-164(p,x)He-3	150.0	6.843E+00	1.529E-01
Dy-164(p,x)He-3	800.0	5.122E+01	1.639E+00
Dy-164(p,x)He-3	1200.0	7.254E+01	2.958E-01
Dy-164(p,x)He-4	62.0	3.367E+01	1.012E+01
Dy-164(p,x)He-4	90.0	5.758E+01	1.176E+01
Dy-164(p,x)He-4	150.0	8.317E+01	1.222E+01
Dy-164(p,x)He-4	800.0	6.728E+02	5.299E+01
Dy-164(p,x)He-4	1200.0	1.137E+03	5.393E+01
Ho-165(p,x)H-1	62.0	7.351E+02	4.568E+01
Ho-165(p,x)H-1	90.0	1.194E+03	6.410E+01
Ho-165(p,x)H-1	1200.0	5.576E+03	8.364E+02
Ho-165(p,x)H-2	62.0	9.034E+01	1.355E+01
Ho-165(p,x)H-2	90.0	1.487E+02	2.231E+01
Ho-165(p,x)H-2	1200.0	1.116E+03	1.674E+02
Ho-165(p,x)H-3	62.0	2.537E+01	5.322E+00
Ho-165(p,x)H-3	90.0	3.984E+01	3.285E+00
Ho-165(p,x)H-3	150.0	2.531E+01	2.007E+00
Ho-165(p,x)H-3	660.0	1.598E+02	1.048E+01
Ho-165(p,x)H-3	1200.0	4.656E+02	6.984E+01
Ho-165(p,x)He-3	62.0	3.210E+00	1.452E-01
Ho-165(p,x)He-3	90.0	6.810E+00	3.999E-01
Ho-165(p,x)He-3	150.0	7.432E+00	4.345E-01
Ho-165(p,x)He-3	800.0	5.460E+01	4.313E+00
Ho-165(p,x)He-3	1200.0	7.660E+01	1.149E+01
Ho-165(p,x)He-4	62.0	3.980E+01	1.324E+01
Ho-165(p,x)He-4	90.0	6.509E+01	1.813E+01
Ho-165(p,x)He-4	150.0	9.128E+01	2.024E+01
Ho-165(p,x)He-4	800.0	7.263E+02	2.377E+01
Ho-165(p,x)He-4	1200.0	1.206E+03	1.809E+02
Er-162(p,x)H-1	62.0	8.930E+02	2.230E+01
Er-162(p,x)H-1	90.0	1.389E+03	6.887E+01
Er-162(p,x)H-1	1200.0	6.499E+03	2.385E+02
Er-162(p,x)H-2	62.0	9.943E+01	1.491E+01
Er-162(p,x)H-2	90.0	1.634E+02	2.451E+01
Er-162(p,x)H-2	1200.0	1.182E+03	9.444E+00
Er-162(p,x)H-3	62.0	1.965E+01	7.472E-01
Er-162(p,x)H-3	90.0	3.664E+01	3.990E+00
Er-162(p,x)H-3	150.0	2.220E+01	1.474E+00
Er-162(p,x)H-3	660.0	1.560E+02	1.164E+01
Er-162(p,x)H-3	1200.0	4.358E+02	8.283E+00
Er-162(p,x)He-3	62.0	3.475E+00	1.775E-01
Er-162(p,x)He-3	90.0	7.768E+00	2.974E-02
Er-162(p,x)He-3	150.0	8.826E+00	3.266E-01
Er-162(p,x)He-3	800.0	6.896E+01	4.574E-01
Er-162(p,x)He-3	1200.0	9.448E+01	2.577E+00
Er-162(p,x)He-4	62.0	7.951E+01	9.140E+00
Er-162(p,x)He-4	90.0	1.331E+02	6.547E+00
Er-162(p,x)He-4	150.0	1.729E+02	2.430E+01
Er-162(p,x)He-4	800.0	9.575E+02	5.012E+01
Er-162(p,x)He-4	1200.0	1.486E+03	1.160E+02
Er-164(p,x)H-1	62.0	8.174E+02	2.268E+01
Er-164(p,x)H-1	90.0	1.306E+03	5.921E+01
Er-164(p,x)H-1	1200.0	6.146E+03	1.600E+02
Er-164(p,x)H-2	62.0	9.744E+01	1.462E+01
Er-164(p,x)H-2	90.0	1.599E+02	2.399E+01
Er-164(p,x)H-2	1200.0	1.162E+03	5.898E+00
Er-164(p,x)H-3	62.0	2.092E+01	7.904E-01
Er-164(p,x)H-3	90.0	3.864E+01	3.860E+00
Er-164(p,x)H-3	150.0	2.298E+01	1.445E+00
Er-164(p,x)H-3	660.0	1.582E+02	1.101E+01
Er-164(p,x)H-3	1200.0	4.473E+02	9.242E+00
Er-164(p,x)He-3	62.0	3.277E+00	2.152E-01
Er-164(p,x)He-3	90.0	7.268E+00	9.963E-02
Er-164(p,x)He-3	150.0	8.151E+00	3.104E-01
Er-164(p,x)He-3	800.0	6.237E+01	2.100E+00
Er-164(p,x)He-3	1200.0	8.702E+01	1.015E+00
Er-164(p,x)He-4	62.0	6.220E+01	1.079E+01
Er-164(p,x)He-4	90.0	1.011E+02	7.009E+00
Er-164(p,x)He-4	150.0	1.343E+02	1.632E+01
Er-164(p,x)He-4	800.0	8.731E+02	3.419E+01
Er-164(p,x)He-4	1200.0	1.393E+03	6.628E+01
Er-166(p,x)H-1	62.0	7.651E+02	2.575E+01
Er-166(p,x)H-1	90.0	1.242E+03	5.216E+01
Er-166(p,x)H-1	1200.0	5.850E+03	7.039E+01
Er-166(p,x)H-2	62.0	9.592E+01	1.439E+01
Er-166(p,x)H-2	90.0	1.571E+02	2.356E+01
Er-166(p,x)H-2	1200.0	1.142E+03	1.672E+00

Er-166(p,x)H-3	62.0	2.194E+01	7.625E-01
Er-166(p,x)H-3	90.0	4.033E+01	3.489E+00
Er-166(p,x)H-3	150.0	2.423E+01	1.407E+00
Er-166(p,x)H-3	660.0	1.596E+02	1.032E+01
Er-166(p,x)H-3	1200.0	4.623E+02	2.701E+00
Er-166(p,x)He-3	62.0	3.059E+00	2.548E-01
Er-166(p,x)He-3	90.0	6.765E+00	1.779E-01
Er-166(p,x)He-3	150.0	7.644E+00	1.197E-01
Er-166(p,x)He-3	800.0	5.947E+01	1.852E+00
Er-166(p,x)He-3	1200.0	8.133E+01	4.374E-01
Er-166(p,x)He-4	62.0	4.910E+01	1.110E+01
Er-166(p,x)He-4	90.0	8.109E+01	9.589E+00
Er-166(p,x)He-4	150.0	1.057E+02	1.879E+01
Er-166(p,x)He-4	800.0	7.929E+02	2.114E+01
Er-166(p,x)He-4	1200.0	1.298E+03	2.360E+01
Er-167(p,x)H-1	62.0	7.518E+02	2.479E+01
Er-167(p,x)H-1	90.0	1.222E+03	5.436E+01
Er-167(p,x)H-1	1200.0	5.714E+03	1.078E+01
Er-167(p,x)H-2	62.0	1.008E+02	1.512E+01
Er-167(p,x)H-2	90.0	1.606E+02	2.409E+01
Er-167(p,x)H-2	1200.0	1.128E+03	5.918E+00
Er-167(p,x)H-3	62.0	2.287E+01	7.780E-01
Er-167(p,x)H-3	90.0	4.074E+01	4.097E-01
Er-167(p,x)H-3	150.0	2.520E+01	1.567E+00
Er-167(p,x)H-3	660.0	1.607E+02	1.003E+01
Er-167(p,x)H-3	1200.0	4.661E+02	2.389E+00
Er-167(p,x)He-3	62.0	3.374E+00	2.723E-01
Er-167(p,x)He-3	90.0	7.128E+00	4.176E-01
Er-167(p,x)He-3	150.0	7.808E+00	2.477E-01
Er-167(p,x)He-3	800.0	5.628E+01	1.789E+00
Er-167(p,x)He-3	1200.0	7.903E+01	1.357E+00
Er-167(p,x)He-4	62.0	4.226E+01	1.216E+01
Er-167(p,x)He-4	90.0	7.088E+01	1.255E+01
Er-167(p,x)He-4	150.0	9.121E+01	2.080E+01
Er-167(p,x)He-4	800.0	7.536E+02	1.861E+01
Er-167(p,x)He-4	1200.0	1.260E+03	5.305E+00
Er-168(p,x)H-1	62.0	7.246E+02	3.084E+01
Er-168(p,x)H-1	90.0	1.190E+03	4.876E+01
Er-168(p,x)H-1	1200.0	5.585E+03	5.417E+01
Er-168(p,x)H-2	62.0	9.596E+01	1.439E+01
Er-168(p,x)H-2	90.0	1.557E+02	2.335E+01
Er-168(p,x)H-2	1200.0	1.120E+03	1.388E+01
Er-168(p,x)H-3	62.0	2.348E+01	9.352E-01
Er-168(p,x)H-3	90.0	4.274E+01	3.307E+00
Er-168(p,x)H-3	150.0	2.590E+01	2.087E+00
Er-168(p,x)H-3	660.0	1.619E+02	8.942E+00
Er-168(p,x)H-3	1200.0	4.727E+02	8.065E+00
Er-168(p,x)He-3	62.0	2.880E+00	2.805E-01
Er-168(p,x)He-3	90.0	6.321E+00	2.350E-01
Er-168(p,x)He-3	150.0	7.096E+00	1.275E-01
Er-168(p,x)He-3	800.0	5.321E+01	3.640E+00
Er-168(p,x)He-3	1200.0	7.586E+01	7.085E-01
Er-168(p,x)He-4	62.0	3.843E+01	1.074E+01
Er-168(p,x)He-4	90.0	6.489E+01	1.094E+01
Er-168(p,x)He-4	150.0	8.343E+01	1.967E+01
Er-168(p,x)He-4	800.0	7.174E+02	2.791E+01
Er-168(p,x)He-4	1200.0	1.216E+03	2.401E+01
Er-170(p,x)H-1	62.0	7.053E+02	3.261E+01
Er-170(p,x)H-1	90.0	1.174E+03	4.907E+01
Er-170(p,x)H-1	1200.0	5.344E+03	1.587E+02
Er-170(p,x)H-2	62.0	9.452E+01	1.418E+01
Er-170(p,x)H-2	90.0	1.528E+02	2.292E+01
Er-170(p,x)H-2	1200.0	1.099E+03	2.398E+01
Er-170(p,x)H-3	62.0	2.554E+01	1.346E+00
Er-170(p,x)H-3	90.0	4.594E+01	2.784E+00
Er-170(p,x)H-3	150.0	2.718E+01	2.109E+00
Er-170(p,x)H-3	660.0	1.649E+02	9.181E+00
Er-170(p,x)H-3	1200.0	4.839E+02	9.483E+00
Er-170(p,x)He-3	62.0	2.652E+00	2.535E-01
Er-170(p,x)He-3	90.0	5.846E+00	1.432E-01
Er-170(p,x)He-3	150.0	6.698E+00	2.526E-01
Er-170(p,x)He-3	800.0	5.004E+01	3.739E+00
Er-170(p,x)He-3	1200.0	7.070E+01	1.473E+00
Er-170(p,x)He-4	62.0	4.208E+01	1.256E+01
Er-170(p,x)He-4	90.0	7.498E+01	2.544E+01
Er-170(p,x)He-4	150.0	8.397E+01	9.254E+00
Er-170(p,x)He-4	800.0	6.433E+02	4.434E+01
Er-170(p,x)He-4	1200.0	1.129E+03	6.113E+01
Tm-169(p,x)H-1	62.0	7.324E+02	1.907E+01
Tm-169(p,x)H-1	90.0	1.214E+03	3.883E+01
Tm-169(p,x)H-1	1200.0	5.866E+03	2.629E+01
Tm-169(p,x)H-2	62.0	9.192E+01	1.379E+01
Tm-169(p,x)H-2	90.0	1.526E+02	2.290E+01
Tm-169(p,x)H-2	1200.0	1.150E+03	7.575E+00
Tm-169(p,x)H-3	62.0	2.234E+01	1.447E+00
Tm-169(p,x)H-3	90.0	3.946E+01	3.538E+00
Tm-169(p,x)H-3	150.0	2.492E+01	1.288E+00
Tm-169(p,x)H-3	660.0	1.620E+02	8.872E+00
Tm-169(p,x)H-3	1200.0	4.703E+02	5.212E+00
Tm-169(p,x)He-3	62.0	3.335E+00	1.329E-01
Tm-169(p,x)He-3	90.0	7.026E+00	4.414E-01
Tm-169(p,x)He-3	150.0	7.779E+00	4.476E-01
Tm-169(p,x)He-3	800.0	5.687E+01	3.524E+00
Tm-169(p,x)He-3	1200.0	8.119E+01	1.218E+01
Tm-169(p,x)He-4	62.0	4.320E+01	1.361E+01
Tm-169(p,x)He-4	90.0	7.448E+01	1.604E+01
Tm-169(p,x)He-4	150.0	1.002E+02	2.473E+01
Tm-169(p,x)He-4	800.0	7.865E+02	1.326E+01
Tm-169(p,x)He-4	1200.0	1.310E+03	8.727E+00
Yb-168(p,x)H-1	62.0	8.663E+02	3.535E+01
Yb-168(p,x)H-1	90.0	1.376E+03	7.597E+01
Yb-168(p,x)H-1	1200.0	6.483E+03	2.046E+02
Yb-168(p,x)H-2	62.0	9.781E+01	1.467E+01
Yb-168(p,x)H-2	90.0	1.617E+02	2.426E+01
Yb-168(p,x)H-2	1200.0	1.200E+03	1.801E+02
Yb-168(p,x)H-3	62.0	1.998E+01	8.516E-01
Yb-168(p,x)H-3	90.0	3.771E+01	4.395E+00
Yb-168(p,x)H-3	150.0	2.345E+01	1.542E+00
Yb-168(p,x)H-3	660.0	1.566E+02	9.372E+00
Yb-168(p,x)H-3	1200.0	4.537E+02	1.023E+00
Yb-168(p,x)He-3	62.0	3.303E+00	2.434E-01
Yb-168(p,x)He-3	90.0	7.347E+00	6.881E-02
Yb-168(p,x)He-3	150.0	8.422E+00	2.897E-01
Yb-168(p,x)He-3	800.0	6.685E+01	1.303E+00
Yb-168(p,x)He-3	1200.0	9.214E+01	1.382E+01
Yb-168(p,x)He-4	62.0	6.914E+01	9.882E+00
Yb-168(p,x)He-4	90.0	1.126E+02	4.276E+00
Yb-168(p,x)He-4	150.0	1.409E+02	2.352E+01
Yb-168(p,x)He-4	800.0	9.379E+02	5.169E+01
Yb-168(p,x)He-4	1200.0	1.498E+03	9.136E+01
Yb-170(p,x)H-1	62.0	7.939E+02	3.167E+01
Yb-170(p,x)H-1	90.0	1.298E+03	6.366E+01
Yb-170(p,x)H-1	1200.0	6.165E+03	8.842E+01
Yb-170(p,x)H-2	62.0	9.756E+01	1.464E+01
Yb-170(p,x)H-2	90.0	1.602E+02	2.403E+01
Yb-170(p,x)H-2	1200.0	1.182E+03	4.372E+00
Yb-170(p,x)H-3	62.0	2.142E+01	8.404E-01
Yb-170(p,x)H-3	90.0	4.005E+01	3.914E+00
Yb-170(p,x)H-3	150.0	2.438E+01	1.643E+00
Yb-170(p,x)H-3	660.0	1.589E+02	7.722E+00
Yb-170(p,x)H-3	1200.0	4.651E+02	9.920E+00
Yb-170(p,x)He-3	62.0	3.170E+00	2.768E-01
Yb-170(p,x)He-3	90.0	6.952E+00	1.310E-01
Yb-170(p,x)He-3	150.0	7.977E+00	9.480E-02
Yb-170(p,x)He-3	800.0	6.184E+01	1.432E+00
Yb-170(p,x)He-3	1200.0	8.728E+01	1.371E+00
Yb-170(p,x)He-4	62.0	5.475E+01	1.092E+01
Yb-170(p,x)He-4	90.0	9.023E+01	7.496E+00
Yb-170(p,x)He-4	150.0	1.133E+02	2.418E+01
Yb-170(p,x)He-4	800.0	8.539E+02	2.098E+01
Yb-170(p,x)He-4	1200.0	1.405E+03	3.839E+01
Yb-171(p,x)H-1	62.0	7.729E+02	2.977E+01
Yb-171(p,x)H-1	90.0	1.270E+03	6.191E+01
Yb-171(p,x)H-1	1200.0	6.019E+03	2.901E+01
Yb-171(p,x)H-2	62.0	1.024E+02	1.537E+01
Yb-171(p,x)H-2	90.0	1.642E+02	2.463E+01
Yb-171(p,x)H-2	1200.0	1.172E+03	1.817E+01
Yb-171(p,x)H-3	62.0	2.273E+01	1.046E+00
Yb-171(p,x)H-3	90.0	4.029E+01	9.933E-01
Yb-171(p,x)H-3	150.0	2.613E+01	5.973E-01
Yb-171(p,x)H-3	660.0	1.615E+02	9.656E+00
Yb-171(p,x)H-3	1200.0	4.738E+02	4.627E+00
Yb-171(p,x)He-3	62.0	3.455E+00	2.972E-01
Yb-171(p,x)He-3	90.0	7.278E+00	4.027E-01
Yb-171(p,x)He-3	150.0	8.108E+00	2.500E-01
Yb-171(p,x)He-3	800.0	5.891E+01	3.929E+00
Yb-171(p,x)He-3	1200.0	8.454E+01	6.238E-01
Yb-171(p,x)He-4	62.0	4.855E+01	1.245E+01
Yb-171(p,x)He-4	90.0	8.149E+01	9.331E+00
Yb-171(p,x)He-4	150.0	1.009E+02	2.092E+01

Yb-171(p,x)He-4	800.0	8.152E+02	1.638E+01
Yb-171(p,x)He-4	1200.0	1.358E+03	2.186E+01
Yb-172(p,x)H-1	62.0	7.444E+02	3.555E+01
Yb-172(p,x)H-1	90.0	1.237E+03	5.520E+01
Yb-172(p,x)H-1	1200.0	5.877E+03	2.915E+01
Yb-172(p,x)H-2	62.0	9.728E+01	1.459E+01
Yb-172(p,x)H-2	90.0	1.588E+02	2.381E+01
Yb-172(p,x)H-2	1200.0	1.158E+03	1.974E+01
Yb-172(p,x)H-3	62.0	2.246E+01	1.241E+00
Yb-172(p,x)H-3	90.0	4.232E+01	3.512E+00
Yb-172(p,x)H-3	150.0	2.875E+01	3.601E+00
Yb-172(p,x)H-3	660.0	1.635E+02	8.893E+00
Yb-172(p,x)H-3	1200.0	4.792E+02	1.134E+01
Yb-172(p,x)He-3	62.0	2.980E+00	3.128E-01
Yb-172(p,x)He-3	90.0	6.494E+00	2.042E-01
Yb-172(p,x)He-3	150.0	7.403E+00	1.195E-01
Yb-172(p,x)He-3	800.0	5.793E+01	2.031E+00
Yb-172(p,x)He-3	1200.0	8.062E+01	1.209E+01
Yb-172(p,x)He-4	62.0	4.380E+01	1.172E+01
Yb-172(p,x)He-4	90.0	7.611E+01	7.361E+00
Yb-172(p,x)He-4	150.0	9.942E+01	1.416E+01
Yb-172(p,x)He-4	800.0	7.779E+02	1.769E+01
Yb-172(p,x)He-4	1200.0	1.310E+03	1.901E+01
Yb-173(p,x)H-1	62.0	7.325E+02	3.022E+01
Yb-173(p,x)H-1	90.0	1.216E+03	5.294E+01
Yb-173(p,x)H-1	1200.0	5.737E+03	8.090E+01
Yb-173(p,x)H-2	62.0	1.002E+02	1.503E+01
Yb-173(p,x)H-2	90.0	1.605E+02	2.408E+01
Yb-173(p,x)H-2	1200.0	1.144E+03	1.490E+01
Yb-173(p,x)H-3	62.0	2.347E+01	9.205E-01
Yb-173(p,x)H-3	90.0	4.262E+01	4.327E-02
Yb-173(p,x)H-3	150.0	3.023E+01	5.435E+00
Yb-173(p,x)H-3	660.0	1.644E+02	9.375E+00
Yb-173(p,x)H-3	1200.0	4.800E+02	1.085E+01
Yb-173(p,x)He-3	62.0	3.166E+00	2.747E-01
Yb-173(p,x)He-3	90.0	6.696E+00	3.609E-01
Yb-173(p,x)He-3	150.0	7.535E+00	2.307E-01
Yb-173(p,x)He-3	800.0	5.509E+01	3.829E+00
Yb-173(p,x)He-3	1200.0	7.832E+01	1.024E+00
Yb-173(p,x)He-4	62.0	3.715E+01	1.463E+01
Yb-173(p,x)He-4	90.0	6.502E+01	1.203E+01
Yb-173(p,x)He-4	150.0	9.143E+01	1.451E+01
Yb-173(p,x)He-4	800.0	7.408E+02	2.813E+01
Yb-173(p,x)He-4	1200.0	1.265E+03	3.726E+01
Yb-174(p,x)H-1	62.0	7.112E+02	3.537E+01
Yb-174(p,x)H-1	90.0	1.190E+03	4.894E+01
Yb-174(p,x)H-1	1200.0	5.615E+03	1.444E+02
Yb-174(p,x)H-2	62.0	9.633E+01	1.445E+01
Yb-174(p,x)H-2	90.0	1.560E+02	2.341E+01
Yb-174(p,x)H-2	1200.0	1.135E+03	2.600E+01
Yb-174(p,x)H-3	62.0	2.389E+01	1.532E+00
Yb-174(p,x)H-3	90.0	4.487E+01	3.172E+00
Yb-174(p,x)H-3	150.0	2.894E+01	3.045E+00
Yb-174(p,x)H-3	660.0	1.660E+02	9.298E+00
Yb-174(p,x)H-3	1200.0	4.891E+02	1.500E+01
Yb-174(p,x)He-3	62.0	2.781E+00	3.426E-01
Yb-174(p,x)He-3	90.0	6.050E+00	2.561E-01
Yb-174(p,x)He-3	150.0	6.877E+00	1.438E-01
Yb-174(p,x)He-3	800.0	5.317E+01	2.367E+00
Yb-174(p,x)He-3	1200.0	7.440E+01	2.211E+00
Yb-174(p,x)He-4	62.0	3.283E+01	1.389E+01
Yb-174(p,x)He-4	90.0	5.912E+01	1.257E+01
Yb-174(p,x)He-4	150.0	8.747E+01	1.387E+01
Yb-174(p,x)He-4	800.0	7.030E+02	4.050E+01
Yb-174(p,x)He-4	1200.0	1.222E+03	6.019E+01
Yb-176(p,x)H-1	62.0	6.979E+02	3.334E+01
Yb-176(p,x)H-1	90.0	1.179E+03	4.602E+01
Yb-176(p,x)H-1	1200.0	5.372E+03	2.513E+02
Yb-176(p,x)H-2	62.0	9.713E+01	1.457E+01
Yb-176(p,x)H-2	90.0	1.556E+02	2.334E+01
Yb-176(p,x)H-2	1200.0	1.114E+03	3.564E+01
Yb-176(p,x)H-3	62.0	2.658E+01	1.457E+00
Yb-176(p,x)H-3	90.0	4.839E+01	2.267E+00
Yb-176(p,x)H-3	150.0	2.951E+01	1.204E+00
Yb-176(p,x)H-3	660.0	1.686E+02	1.159E+01
Yb-176(p,x)H-3	1200.0	4.992E+02	1.587E+01
Yb-176(p,x)He-3	62.0	2.583E+00	3.197E-01
Yb-176(p,x)He-3	90.0	5.622E+00	1.785E-01
Yb-176(p,x)He-3	150.0	6.600E+00	1.103E-01
Yb-176(p,x)He-3	800.0	4.916E+01	2.819E+00
Yb-176(p,x)He-3	1200.0	7.159E+01	1.026E+00
Yb-176(p,x)He-4	62.0	3.745E+01	1.007E+01
Yb-176(p,x)He-4	90.0	7.006E+01	2.050E+01
Yb-176(p,x)He-4	150.0	9.871E+01	3.164E+01
Yb-176(p,x)He-4	800.0	6.332E+02	5.565E+01
Yb-176(p,x)He-4	1200.0	1.134E+03	9.807E+01
Lu-175(p,x)H-1	62.0	7.352E+02	3.541E+01
Lu-175(p,x)H-1	90.0	1.234E+03	5.753E+01
Lu-175(p,x)H-1	1200.0	5.879E+03	7.379E+01
Lu-175(p,x)H-2	62.0	9.316E+01	1.397E+01
Lu-175(p,x)H-2	90.0	1.546E+02	2.318E+01
Lu-175(p,x)H-2	1200.0	1.165E+03	1.694E+01
Lu-175(p,x)H-3	62.0	2.494E+01	3.873E+00
Lu-175(p,x)H-3	90.0	4.130E+01	3.173E+00
Lu-175(p,x)H-3	150.0	2.799E+01	2.309E+00
Lu-175(p,x)H-3	660.0	1.639E+02	9.190E+00
Lu-175(p,x)H-3	1200.0	4.862E+02	1.343E+01
Lu-175(p,x)He-3	62.0	3.213E+00	1.151E-01
Lu-175(p,x)He-3	90.0	6.722E+00	3.873E-01
Lu-175(p,x)He-3	150.0	7.510E+00	4.355E-01
Lu-175(p,x)He-3	800.0	5.689E+01	2.087E+00
Lu-175(p,x)He-3	1200.0	8.108E+01	8.832E-01
Lu-175(p,x)He-4	62.0	4.139E+01	1.449E+01
Lu-175(p,x)He-4	90.0	6.977E+01	1.890E+01
Lu-175(p,x)He-4	150.0	9.473E+01	2.553E+01
Lu-175(p,x)He-4	800.0	7.672E+02	2.470E+01
Lu-175(p,x)He-4	1200.0	1.316E+03	3.949E+01
Lu-176(p,x)H-1	62.0	7.422E+02	3.297E+01
Lu-176(p,x)H-1	90.0	1.245E+03	6.877E+01
Lu-176(p,x)H-1	1200.0	5.750E+03	1.298E+02
Lu-176(p,x)H-2	62.0	9.621E+01	1.443E+01
Lu-176(p,x)H-2	90.0	1.579E+02	2.368E+01
Lu-176(p,x)H-2	1200.0	1.155E+03	3.060E+01
Lu-176(p,x)H-3	62.0	2.524E+01	2.820E+00
Lu-176(p,x)H-3	90.0	4.199E+01	1.544E-01
Lu-176(p,x)H-3	150.0	2.880E+01	2.326E+00
Lu-176(p,x)H-3	660.0	1.676E+02	1.134E+01
Lu-176(p,x)H-3	1200.0	4.917E+02	1.874E+01
Lu-176(p,x)He-3	62.0	3.401E+00	3.840E-01
Lu-176(p,x)He-3	90.0	6.930E+00	6.963E-01
Lu-176(p,x)He-3	150.0	7.613E+00	5.283E-01
Lu-176(p,x)He-3	800.0	5.543E+01	1.622E+00
Lu-176(p,x)He-3	1200.0	7.761E+01	1.201E+00
Lu-176(p,x)He-4	62.0	3.731E+01	1.479E+01
Lu-176(p,x)He-4	90.0	6.193E+01	1.811E+01
Lu-176(p,x)He-4	150.0	8.662E+01	2.396E+01
Lu-176(p,x)He-4	800.0	7.319E+02	3.571E+01
Lu-176(p,x)He-4	1200.0	1.272E+03	6.418E+01
Hf-174(p,x)H-1	62.0	8.364E+02	3.631E+01
Hf-174(p,x)H-1	90.0	1.358E+03	6.953E+01
Hf-174(p,x)H-1	1200.0	6.488E+03	1.144E+02
Hf-174(p,x)H-2	62.0	9.970E+01	1.496E+01
Hf-174(p,x)H-2	90.0	1.639E+02	2.459E+01
Hf-174(p,x)H-2	1200.0	1.220E+03	4.830E+00
Hf-174(p,x)H-3	62.0	2.076E+01	8.536E-01
Hf-174(p,x)H-3	90.0	3.957E+01	4.255E+00
Hf-174(p,x)H-3	150.0	2.510E+01	1.607E+00
Hf-174(p,x)H-3	660.0	1.612E+02	8.698E+00
Hf-174(p,x)H-3	1200.0	4.693E+02	7.615E+00
Hf-174(p,x)He-3	62.0	3.232E+00	3.165E-01
Hf-174(p,x)He-3	90.0	7.075E+00	1.020E-01
Hf-174(p,x)He-3	150.0	8.158E+00	3.040E-01
Hf-174(p,x)He-3	800.0	6.648E+01	3.128E-01
Hf-174(p,x)He-3	1200.0	9.190E+01	9.252E-01
Hf-174(p,x)He-4	62.0	6.398E+01	1.195E+01
Hf-174(p,x)He-4	90.0	1.056E+02	5.272E+00
Hf-174(p,x)He-4	150.0	1.343E+02	2.404E+01
Hf-174(p,x)He-4	800.0	9.248E+02	3.180E+01
Hf-174(p,x)He-4	1200.0	1.510E+03	4.731E+01
Hf-176(p,x)H-1	62.0	7.675E+02	3.286E+01
Hf-176(p,x)H-1	90.0	1.292E+03	6.265E+01
Hf-176(p,x)H-1	1200.0	6.171E+03	6.390E+00
Hf-176(p,x)H-2	62.0	9.749E+01	1.462E+01
Hf-176(p,x)H-2	90.0	1.616E+02	2.425E+01
Hf-176(p,x)H-2	1200.0	1.193E+03	1.194E+01
Hf-176(p,x)H-3	62.0	2.198E+01	8.814E-01
Hf-176(p,x)H-3	90.0	4.162E+01	3.503E+00
Hf-176(p,x)H-3	150.0	2.631E+01	1.592E+00
Hf-176(p,x)H-3	660.0	1.639E+02	8.071E+00
Hf-176(p,x)H-3	1200.0	4.804E+02	9.926E+00

Hf-176(p,x)He-3	62.0	3.071E+00	3.469E-01
Hf-176(p,x)He-3	90.0	6.660E+00	1.622E-01
Hf-176(p,x)He-3	150.0	7.717E+00	1.042E-01
Hf-176(p,x)He-3	800.0	6.136E+01	6.858E-01
Hf-176(p,x)He-3	1200.0	8.599E+01	3.367E-01
Hf-176(p,x)He-4	62.0	5.004E+01	1.277E+01
Hf-176(p,x)He-4	90.0	8.505E+01	8.083E+00
Hf-176(p,x)He-4	150.0	1.085E+02	2.483E+01
Hf-176(p,x)He-4	800.0	8.411E+02	1.967E+01
Hf-176(p,x)He-4	1200.0	1.410E+03	2.307E+01
Hf-177(p,x)H-1	62.0	7.485E+02	3.029E+01
Hf-177(p,x)H-1	90.0	1.263E+03	5.989E+01
Hf-177(p,x)H-1	1200.0	6.034E+03	5.885E+01
Hf-177(p,x)H-2	62.0	1.021E+02	1.532E+01
Hf-177(p,x)H-2	90.0	1.642E+02	2.464E+01
Hf-177(p,x)H-2	1200.0	1.181E+03	2.477E+01
Hf-177(p,x)H-3	62.0	2.310E+01	7.234E-01
Hf-177(p,x)H-3	90.0	4.224E+01	6.824E-01
Hf-177(p,x)H-3	150.0	2.752E+01	1.731E+00
Hf-177(p,x)H-3	660.0	1.648E+02	9.108E+00
Hf-177(p,x)H-3	1200.0	4.901E+02	1.825E+01
Hf-177(p,x)He-3	62.0	3.281E+00	3.033E-01
Hf-177(p,x)He-3	90.0	6.872E+00	3.452E-01
Hf-177(p,x)He-3	150.0	7.826E+00	2.461E-01
Hf-177(p,x)He-3	800.0	5.890E+01	7.941E-01
Hf-177(p,x)He-3	1200.0	8.329E+01	1.150E+00
Hf-177(p,x)He-4	62.0	4.434E+01	1.486E+01
Hf-177(p,x)He-4	90.0	7.515E+01	1.040E+01
Hf-177(p,x)He-4	150.0	9.681E+01	2.469E+01
Hf-177(p,x)He-4	800.0	8.038E+02	2.208E+01
Hf-177(p,x)He-4	1200.0	1.365E+03	5.003E+01
Hf-178(p,x)H-1	62.0	7.194E+02	3.623E+01
Hf-178(p,x)H-1	90.0	1.223E+03	5.145E+01
Hf-178(p,x)H-1	1200.0	5.901E+03	1.172E+02
Hf-178(p,x)H-2	62.0	9.739E+01	1.461E+01
Hf-178(p,x)H-2	90.0	1.596E+02	2.393E+01
Hf-178(p,x)H-2	1200.0	1.172E+03	2.576E+01
Hf-178(p,x)H-3	62.0	2.359E+01	1.153E+00
Hf-178(p,x)H-3	90.0	4.440E+01	3.198E+00
Hf-178(p,x)H-3	150.0	2.837E+01	2.553E+00
Hf-178(p,x)H-3	660.0	1.689E+02	9.175E+00
Hf-178(p,x)H-3	1200.0	4.935E+02	2.008E+01
Hf-178(p,x)He-3	62.0	2.848E+00	3.159E-01
Hf-178(p,x)He-3	90.0	6.156E+00	1.010E-01
Hf-178(p,x)He-3	150.0	7.157E+00	1.377E-01
Hf-178(p,x)He-3	800.0	5.703E+01	2.069E+00
Hf-178(p,x)He-3	1200.0	8.077E+01	7.772E-01
Hf-178(p,x)He-4	62.0	4.012E+01	1.384E+01
Hf-178(p,x)He-4	90.0	6.882E+01	1.118E+01
Hf-178(p,x)He-4	150.0	9.002E+01	2.355E+01
Hf-178(p,x)He-4	800.0	7.714E+02	3.229E+01
Hf-178(p,x)He-4	1200.0	1.326E+03	5.512E+01
Hf-179(p,x)H-1	62.0	7.084E+02	3.168E+01
Hf-179(p,x)H-1	90.0	1.203E+03	4.951E+01
Hf-179(p,x)H-1	1200.0	5.769E+03	1.668E+02
Hf-179(p,x)H-2	62.0	9.962E+01	1.494E+01
Hf-179(p,x)H-2	90.0	1.601E+02	2.401E+01
Hf-179(p,x)H-2	1200.0	1.158E+03	3.189E+01
Hf-179(p,x)H-3	62.0	2.458E+01	8.159E-01
Hf-179(p,x)H-3	90.0	4.457E+01	4.095E-01
Hf-179(p,x)H-3	150.0	2.908E+01	3.022E+00
Hf-179(p,x)H-3	660.0	1.724E+02	1.254E+01
Hf-179(p,x)H-3	1200.0	4.974E+02	1.617E+01
Hf-179(p,x)He-3	62.0	2.990E+00	2.599E-01
Hf-179(p,x)He-3	90.0	6.302E+00	3.029E-01
Hf-179(p,x)He-3	150.0	7.261E+00	2.168E-01
Hf-179(p,x)He-3	800.0	5.422E+01	2.084E+00
Hf-179(p,x)He-3	1200.0	7.754E+01	1.620E+00
Hf-179(p,x)He-4	62.0	3.495E+01	1.570E+01
Hf-179(p,x)He-4	90.0	5.955E+01	1.335E+01
Hf-179(p,x)He-4	150.0	8.258E+01	2.080E+01
Hf-179(p,x)He-4	800.0	7.281E+02	4.474E+01
Hf-179(p,x)He-4	1200.0	1.271E+03	8.149E+01
Hf-180(p,x)H-1	62.0	6.880E+02	3.633E+01
Hf-180(p,x)H-1	90.0	1.177E+03	4.455E+01
Hf-180(p,x)H-1	1200.0	5.648E+03	2.335E+02
Hf-180(p,x)H-2	62.0	9.436E+01	1.415E+01
Hf-180(p,x)H-2	90.0	1.546E+02	2.320E+01
Hf-180(p,x)H-2	1200.0	1.149E+03	4.332E+01
Hf-180(p,x)H-3	62.0	2.430E+01	1.603E+00
Hf-180(p,x)H-3	90.0	4.601E+01	3.582E+00
Hf-180(p,x)H-3	150.0	2.887E+01	2.763E+00
Hf-180(p,x)H-3	660.0	1.711E+02	1.349E+01
Hf-180(p,x)H-3	1200.0	5.059E+02	2.261E+01
Hf-180(p,x)He-3	62.0	2.572E+00	2.925E-01
Hf-180(p,x)He-3	90.0	5.602E+00	6.415E-02
Hf-180(p,x)He-3	150.0	6.605E+00	1.535E-01
Hf-180(p,x)He-3	800.0	5.278E+01	2.128E+00
Hf-180(p,x)He-3	1200.0	7.514E+01	1.642E+00
Hf-180(p,x)He-4	62.0	2.972E+01	1.377E+01
Hf-180(p,x)He-4	90.0	5.265E+01	1.321E+01
Hf-180(p,x)He-4	150.0	8.227E+01	2.157E+01
Hf-180(p,x)He-4	800.0	6.948E+02	5.749E+01
Hf-180(p,x)He-4	1200.0	1.236E+03	1.055E+02
Ta-180(p,x)H-1	62.0	7.253E+02	2.044E+01
Ta-180(p,x)H-1	90.0	1.248E+03	5.081E+01
Ta-180(p,x)H-1	1200.0	6.050E+03	1.083E+02
Ta-180(p,x)H-2	62.0	9.401E+01	1.410E+01
Ta-180(p,x)H-2	90.0	1.560E+02	2.340E+01
Ta-180(p,x)H-2	1200.0	1.193E+03	2.979E+01
Ta-180(p,x)H-3	62.0	2.287E+01	1.872E+00
Ta-180(p,x)H-3	90.0	4.043E+01	1.534E+00
Ta-180(p,x)H-3	150.0	2.760E+01	9.437E-01
Ta-180(p,x)H-3	660.0	1.701E+02	9.245E+00
Ta-180(p,x)H-3	1200.0	4.973E+02	1.895E+01
Ta-180(p,x)He-3	62.0	3.321E+00	3.525E-01
Ta-180(p,x)He-3	90.0	6.842E+00	7.192E-01
Ta-180(p,x)He-3	150.0	7.677E+00	6.231E-01
Ta-180(p,x)He-3	800.0	5.939E+01	5.364E-01
Ta-180(p,x)He-3	1200.0	8.392E+01	7.562E-01
Ta-180(p,x)He-4	62.0	4.034E+01	1.325E+01
Ta-180(p,x)He-4	90.0	7.243E+01	1.362E+01
Ta-180(p,x)He-4	150.0	1.008E+02	2.640E+01
Ta-180(p,x)He-4	800.0	8.045E+02	3.774E+01
Ta-180(p,x)He-4	1200.0	1.375E+03	6.534E+01
Ta-181(p,x)H-1	62.0	7.003E+02	2.744E+01
Ta-181(p,x)H-1	90.0	1.217E+03	5.760E+01
Ta-181(p,x)H-1	1200.0	6.051E+03	9.077E+02
Ta-181(p,x)H-2	62.0	9.018E+01	1.353E+01
Ta-181(p,x)H-2	90.0	1.501E+02	2.251E+01
Ta-181(p,x)H-2	1200.0	1.214E+03	1.821E+02
Ta-181(p,x)H-3	62.0	2.348E+01	1.631E+00
Ta-181(p,x)H-3	90.0	4.163E+01	4.212E+00
Ta-181(p,x)H-3	150.0	2.780E+01	1.035E+00
Ta-181(p,x)H-3	660.0	1.718E+02	1.112E+01
Ta-181(p,x)H-3	1200.0	5.257E+02	7.886E+01
Ta-181(p,x)He-3	62.0	3.066E+00	4.568E-01
Ta-181(p,x)He-3	90.0	6.297E+00	3.115E-01
Ta-181(p,x)He-3	150.0	7.117E+00	3.694E-01
Ta-181(p,x)He-3	800.0	5.681E+01	2.159E+00
Ta-181(p,x)He-3	1200.0	7.960E+01	1.194E+01
Ta-181(p,x)He-4	62.0	3.435E+01	1.284E+01
Ta-181(p,x)He-4	90.0	5.989E+01	1.793E+01
Ta-181(p,x)He-4	150.0	8.524E+01	2.791E+01
Ta-181(p,x)He-4	800.0	7.760E+02	3.531E+01
Ta-181(p,x)He-4	1200.0	1.389E+03	2.084E+02
W-180(p,x)H-1	62.0	7.826E+02	3.476E+01
W-180(p,x)H-1	90.0	1.325E+03	6.181E+01
W-180(p,x)H-1	1200.0	6.473E+03	9.710E+02
W-180(p,x)H-2	62.0	9.647E+01	1.447E+01
W-180(p,x)H-2	90.0	1.608E+02	2.413E+01
W-180(p,x)H-2	1200.0	1.212E+03	1.817E+02
W-180(p,x)H-3	62.0	2.086E+01	9.966E-01
W-180(p,x)H-3	90.0	4.031E+01	4.637E+00
W-180(p,x)H-3	150.0	2.637E+01	1.682E+00
W-180(p,x)H-3	660.0	1.624E+02	1.459E+00
W-180(p,x)H-3	1200.0	4.734E+02	7.101E+01
W-180(p,x)He-3	62.0	2.943E+00	2.840E-01
W-180(p,x)He-3	90.0	6.482E+00	6.501E-02
W-180(p,x)He-3	150.0	7.752E+00	2.976E-01
W-180(p,x)He-3	800.0	6.488E+01	9.732E+00
W-180(p,x)He-3	1200.0	9.127E+01	1.369E+01
W-180(p,x)He-4	62.0	5.478E+01	1.074E+01
W-180(p,x)He-4	90.0	9.443E+01	6.650E+00
W-180(p,x)He-4	150.0	1.235E+02	2.697E+01
W-180(p,x)He-4	800.0	9.148E+02	1.372E+02
W-180(p,x)He-4	1200.0	1.512E+03	2.269E+02
W-182(p,x)H-1	62.0	7.307E+02	3.502E+01
W-182(p,x)H-1	90.0	1.257E+03	5.059E+01
W-182(p,x)H-1	1200.0	6.174E+03	9.260E+02

W-182(p,x)H-2	62.0	9.514E+01	1.427E+01
W-182(p,x)H-2	90.0	1.576E+02	2.364E+01
W-182(p,x)H-2	1200.0	1.196E+03	1.794E+02
W-182(p,x)H-3	62.0	2.184E+01	1.051E+00
W-182(p,x)H-3	90.0	4.193E+01	4.424E+00
W-182(p,x)H-3	150.0	2.711E+01	1.659E+00
W-182(p,x)H-3	660.0	1.670E+02	4.846E+00
W-182(p,x)H-3	1200.0	4.901E+02	7.351E+01
W-182(p,x)He-3	62.0	2.705E+00	2.642E-01
W-182(p,x)He-3	90.0	5.963E+00	1.012E-01
W-182(p,x)He-3	150.0	7.168E+00	3.230E-01
W-182(p,x)He-3	800.0	6.128E+01	9.192E+00
W-182(p,x)He-3	1200.0	8.668E+01	1.300E+01
W-182(p,x)He-4	62.0	4.168E+01	9.408E+00
W-182(p,x)He-4	90.0	7.501E+01	5.324E+00
W-182(p,x)He-4	150.0	9.923E+01	2.222E+01
W-182(p,x)He-4	800.0	8.407E+02	1.261E+02
W-182(p,x)He-4	1200.0	1.420E+03	2.130E+02
W-183(p,x)H-1	62.0	7.194E+02	3.306E+01
W-183(p,x)H-1	90.0	1.236E+03	5.229E+01
W-183(p,x)H-1	1200.0	6.043E+03	9.065E+02
W-183(p,x)H-2	62.0	1.004E+02	1.506E+01
W-183(p,x)H-2	90.0	1.616E+02	2.423E+01
W-183(p,x)H-2	1200.0	1.190E+03	1.785E+02
W-183(p,x)H-3	62.0	2.335E+01	5.262E-01
W-183(p,x)H-3	90.0	4.284E+01	1.743E+00
W-183(p,x)H-3	150.0	2.789E+01	1.021E+00
W-183(p,x)H-3	660.0	1.696E+02	4.420E+00
W-183(p,x)H-3	1200.0	4.979E+02	7.468E+01
W-183(p,x)He-3	62.0	2.979E+00	3.005E-01
W-183(p,x)He-3	90.0	6.307E+00	2.885E-01
W-183(p,x)He-3	150.0	7.377E+00	2.856E-01
W-183(p,x)He-3	800.0	5.779E+01	8.668E+00
W-183(p,x)He-3	1200.0	8.250E+01	1.238E+01
W-183(p,x)He-4	62.0	3.700E+01	1.059E+01
W-183(p,x)He-4	90.0	6.536E+01	3.657E+00
W-183(p,x)He-4	150.0	8.673E+01	1.995E+01
W-183(p,x)He-4	800.0	8.065E+02	1.210E+02
W-183(p,x)He-4	1200.0	1.376E+03	2.065E+02
W-184(p,x)H-1	62.0	6.977E+02	3.822E+01
W-184(p,x)H-1	90.0	1.206E+03	4.599E+01
W-184(p,x)H-1	1200.0	5.912E+03	8.868E+02
W-184(p,x)H-2	62.0	9.620E+01	1.443E+01
W-184(p,x)H-2	90.0	1.576E+02	2.363E+01
W-184(p,x)H-2	1200.0	1.185E+03	1.777E+02
W-184(p,x)H-3	62.0	2.401E+01	1.285E+00
W-184(p,x)H-3	90.0	4.535E+01	4.009E+00
W-184(p,x)H-3	150.0	3.053E+01	4.220E+00
W-184(p,x)H-3	660.0	1.705E+02	7.005E+00
W-184(p,x)H-3	1200.0	5.095E+02	7.643E+01
W-184(p,x)He-3	62.0	2.561E+00	2.863E-01
W-184(p,x)He-3	90.0	5.602E+00	6.070E-02
W-184(p,x)He-3	150.0	6.819E+00	1.685E-01
W-184(p,x)He-3	800.0	5.659E+01	8.489E+00
W-184(p,x)He-3	1200.0	7.984E+01	1.198E+01
W-184(p,x)He-4	62.0	3.731E+01	1.291E+01
W-184(p,x)He-4	90.0	6.757E+01	1.777E+01
W-184(p,x)He-4	150.0	8.706E+01	2.140E+01
W-184(p,x)He-4	800.0	7.742E+02	1.161E+02
W-184(p,x)He-4	1200.0	1.336E+03	2.005E+02
W-186(p,x)H-1	62.0	6.807E+02	3.306E+01
W-186(p,x)H-1	90.0	1.187E+03	3.661E+01
W-186(p,x)H-1	1200.0	5.666E+03	8.500E+02
W-186(p,x)H-2	62.0	9.411E+01	1.412E+01
W-186(p,x)H-2	90.0	1.537E+02	2.305E+01
W-186(p,x)H-2	1200.0	1.162E+03	1.742E+02
W-186(p,x)H-3	62.0	2.497E+01	1.727E+00
W-186(p,x)H-3	90.0	4.721E+01	2.573E+00
W-186(p,x)H-3	150.0	3.474E+01	9.547E+00
W-186(p,x)H-3	660.0	1.735E+02	8.733E+00
W-186(p,x)H-3	1200.0	5.211E+02	7.816E+01
W-186(p,x)He-3	62.0	2.319E+00	2.693E-01
W-186(p,x)He-3	90.0	5.116E+00	9.125E-02
W-186(p,x)He-3	150.0	6.365E+00	2.327E-01
W-186(p,x)He-3	800.0	5.237E+01	7.856E+00
W-186(p,x)He-3	1200.0	7.517E+01	1.127E+01
W-186(p,x)He-4	62.0	2.658E+01	1.066E+01
W-186(p,x)He-4	90.0	4.914E+01	1.003E+01
W-186(p,x)He-4	150.0	7.445E+01	2.128E+01
W-186(p,x)He-4	800.0	7.026E+02	1.054E+02
W-186(p,x)He-4	1200.0	1.244E+03	1.866E+02
Re-185(p,x)H-1	62.0	7.056E+02	9.340E+00
Re-185(p,x)H-1	90.0	1.234E+03	2.776E+01
Re-185(p,x)H-1	1200.0	6.172E+03	1.345E+02
Re-185(p,x)H-2	62.0	9.239E+01	1.386E+01
Re-185(p,x)H-2	90.0	1.553E+02	2.330E+01
Re-185(p,x)H-2	1200.0	1.217E+03	4.722E+00
Re-185(p,x)H-3	62.0	2.290E+01	7.383E-01
Re-185(p,x)H-3	90.0	4.192E+01	4.036E+00
Re-185(p,x)H-3	150.0	2.878E+01	1.776E+00
Re-185(p,x)H-3	660.0	1.695E+02	5.001E+00
Re-185(p,x)H-3	1200.0	5.021E+02	6.567E+00
Re-185(p,x)He-3	62.0	2.957E+00	8.624E-02
Re-185(p,x)He-3	90.0	6.235E+00	4.778E-01
Re-185(p,x)He-3	150.0	7.296E+00	6.082E-01
Re-185(p,x)He-3	800.0	6.045E+01	7.125E-01
Re-185(p,x)He-3	1200.0	8.646E+01	2.082E+00
Re-185(p,x)He-4	62.0	3.922E+01	1.199E+01
Re-185(p,x)He-4	90.0	7.038E+01	1.094E+01
Re-185(p,x)He-4	150.0	9.736E+01	2.466E+01
Re-185(p,x)He-4	800.0	8.582E+02	3.145E+01
Re-185(p,x)He-4	1200.0	1.452E+03	3.947E+01
Re-187(p,x)H-1	62.0	6.796E+02	1.786E+01
Re-187(p,x)H-1	90.0	1.202E+03	4.156E+01
Re-187(p,x)H-1	1200.0	5.933E+03	6.506E+01
Re-187(p,x)H-2	62.0	9.026E+01	1.354E+01
Re-187(p,x)H-2	90.0	1.513E+02	2.270E+01
Re-187(p,x)H-2	1200.0	1.206E+03	5.946E+00
Re-187(p,x)H-3	62.0	2.500E+01	2.384E+00
Re-187(p,x)H-3	90.0	4.361E+01	3.638E+00
Re-187(p,x)H-3	150.0	3.231E+01	5.658E+00
Re-187(p,x)H-3	660.0	1.731E+02	6.432E+00
Re-187(p,x)H-3	1200.0	5.177E+02	1.133E+00
Re-187(p,x)He-3	62.0	2.699E+00	6.390E-02
Re-187(p,x)He-3	90.0	5.742E+00	4.971E-01
Re-187(p,x)He-3	150.0	6.806E+00	6.496E-01
Re-187(p,x)He-3	800.0	5.628E+01	3.793E-01
Re-187(p,x)He-3	1200.0	8.026E+01	2.090E+00
Re-187(p,x)He-4	62.0	3.020E+01	1.246E+01
Re-187(p,x)He-4	90.0	5.251E+01	1.359E+01
Re-187(p,x)He-4	150.0	8.108E+01	2.372E+01
Re-187(p,x)He-4	800.0	7.653E+02	1.531E+01
Re-187(p,x)He-4	1200.0	1.353E+03	2.585E+01
Os-184(p,x)H-1	62.0	8.345E+02	4.521E+01
Os-184(p,x)H-1	90.0	1.411E+03	7.709E+01
Os-184(p,x)H-1	1200.0	6.804E+03	2.638E+02
Os-184(p,x)H-2	62.0	9.766E+01	1.465E+01
Os-184(p,x)H-2	90.0	1.639E+02	2.458E+01
Os-184(p,x)H-2	1200.0	1.274E+03	1.246E+01
Os-184(p,x)H-3	62.0	1.998E+01	1.083E+00
Os-184(p,x)H-3	90.0	3.968E+01	4.806E+00
Os-184(p,x)H-3	150.0	2.661E+01	1.821E+00
Os-184(p,x)H-3	660.0	1.644E+02	2.146E-01
Os-184(p,x)H-3	1200.0	4.814E+02	2.080E+01
Os-184(p,x)He-3	62.0	3.006E+00	3.441E-01
Os-184(p,x)He-3	90.0	6.591E+00	6.828E-02
Os-184(p,x)He-3	150.0	8.020E+00	2.712E-01
Os-184(p,x)He-3	800.0	6.984E+01	2.411E+00
Os-184(p,x)He-3	1200.0	9.796E+01	2.742E+00
Os-184(p,x)He-4	62.0	6.455E+01	1.280E+01
Os-184(p,x)He-4	90.0	1.102E+02	1.112E+01
Os-184(p,x)He-4	150.0	1.349E+02	2.596E+01
Os-184(p,x)He-4	800.0	1.021E+03	7.537E+01
Os-184(p,x)He-4	1200.0	1.667E+03	9.933E+01
Os-186(p,x)H-1	62.0	7.688E+02	4.053E+01
Os-186(p,x)H-1	90.0	1.324E+03	6.093E+01
Os-186(p,x)H-1	1200.0	6.475E+03	2.775E+02
Os-186(p,x)H-2	62.0	9.769E+01	1.465E+01
Os-186(p,x)H-2	90.0	1.631E+02	2.446E+01
Os-186(p,x)H-2	1200.0	1.256E+03	7.995E+00
Os-186(p,x)H-3	62.0	2.141E+01	1.222E+00
Os-186(p,x)H-3	90.0	4.201E+01	3.807E+00
Os-186(p,x)H-3	150.0	2.793E+01	1.838E+00
Os-186(p,x)H-3	660.0	1.684E+02	2.209E+00
Os-186(p,x)H-3	1200.0	4.970E+02	1.831E+01
Os-186(p,x)He-3	62.0	2.847E+00	3.678E-01
Os-186(p,x)He-3	90.0	6.190E+00	1.698E-02
Os-186(p,x)He-3	150.0	7.594E+00	5.769E-02
Os-186(p,x)He-3	800.0	6.387E+01	3.172E+00
Os-186(p,x)He-3	1200.0	9.332E+01	5.052E+00

Os-186(p,x)He-4	62.0	4.885E+01	1.319E+01
Os-186(p,x)He-4	90.0	8.659E+01	6.703E+00
Os-186(p,x)He-4	150.0	1.122E+02	2.476E+01
Os-186(p,x)He-4	800.0	9.435E+02	6.925E+01
Os-186(p,x)He-4	1200.0	1.573E+03	1.028E+02
Os-187(p,x)H-1	62.0	7.509E+02	3.588E+01
Os-187(p,x)H-1	90.0	1.293E+03	5.564E+01
Os-187(p,x)H-1	1200.0	6.352E+03	2.077E+02
Os-187(p,x)H-2	62.0	1.033E+02	1.549E+01
Os-187(p,x)H-2	90.0	1.666E+02	2.500E+01
Os-187(p,x)H-2	1200.0	1.253E+03	7.073E+00
Os-187(p,x)H-3	62.0	2.282E+01	8.882E-01
Os-187(p,x)H-3	90.0	4.265E+01	9.964E-01
Os-187(p,x)H-3	150.0	2.868E+01	1.310E+00
Os-187(p,x)H-3	660.0	1.687E+02	1.413E+00
Os-187(p,x)H-3	1200.0	5.090E+02	1.027E+01
Os-187(p,x)He-3	62.0	3.095E+00	3.577E-01
Os-187(p,x)He-3	90.0	6.475E+00	2.968E-01
Os-187(p,x)He-3	150.0	7.729E+00	2.432E-01
Os-187(p,x)He-3	800.0	6.185E+01	4.090E+00
Os-187(p,x)He-3	1200.0	8.739E+01	1.844E+00
Os-187(p,x)He-4	62.0	4.293E+01	1.551E+01
Os-187(p,x)He-4	90.0	7.472E+01	5.115E+00
Os-187(p,x)He-4	150.0	9.894E+01	2.237E+01
Os-187(p,x)He-4	800.0	8.866E+02	4.814E+01
Os-187(p,x)He-4	1200.0	1.514E+03	7.717E+01
Os-188(p,x)H-1	62.0	7.217E+02	3.938E+01
Os-188(p,x)H-1	90.0	1.258E+03	4.847E+01
Os-188(p,x)H-1	1200.0	6.223E+03	1.495E+02
Os-188(p,x)H-2	62.0	9.540E+01	1.431E+01
Os-188(p,x)H-2	90.0	1.588E+02	2.382E+01
Os-188(p,x)H-2	1200.0	1.252E+03	3.111E+00
Os-188(p,x)H-3	62.0	2.275E+01	1.393E+00
Os-188(p,x)H-3	90.0	4.410E+01	4.038E+00
Os-188(p,x)H-3	150.0	2.920E+01	2.031E+00
Os-188(p,x)H-3	660.0	1.696E+02	4.410E+00
Os-188(p,x)H-3	1200.0	5.164E+02	6.809E+00
Os-188(p,x)He-3	62.0	2.561E+00	3.420E-01
Os-188(p,x)He-3	90.0	5.621E+00	3.509E-02
Os-188(p,x)He-3	150.0	6.974E+00	7.906E-02
Os-188(p,x)He-3	800.0	6.001E+01	2.147E+00
Os-188(p,x)He-3	1200.0	8.631E+01	3.317E+00
Os-188(p,x)He-4	62.0	3.829E+01	1.329E+01
Os-188(p,x)He-4	90.0	6.729E+01	6.333E+00
Os-188(p,x)He-4	150.0	9.112E+01	2.249E+01
Os-188(p,x)He-4	800.0	8.293E+02	3.164E+01
Os-188(p,x)He-4	1200.0	1.460E+03	5.322E+01
Os-189(p,x)H-1	62.0	7.241E+02	3.922E+01
Os-189(p,x)H-1	90.0	1.265E+03	6.081E+01
Os-189(p,x)H-1	1200.0	6.100E+03	8.944E+01
Os-189(p,x)H-2	62.0	1.010E+02	1.515E+01
Os-189(p,x)H-2	90.0	1.623E+02	2.435E+01
Os-189(p,x)H-2	1200.0	1.242E+03	1.863E+02
Os-189(p,x)H-3	62.0	2.388E+01	1.067E+00
Os-189(p,x)H-3	90.0	4.469E+01	9.510E-01
Os-189(p,x)H-3	150.0	2.989E+01	1.944E+00
Os-189(p,x)H-3	660.0	1.698E+02	3.945E+00
Os-189(p,x)H-3	1200.0	5.265E+02	3.584E+00
Os-189(p,x)He-3	62.0	2.809E+00	3.275E-01
Os-189(p,x)He-3	90.0	5.909E+00	2.689E-01
Os-189(p,x)He-3	150.0	7.137E+00	2.255E-01
Os-189(p,x)He-3	800.0	5.879E+01	1.646E+00
Os-189(p,x)He-3	1200.0	8.127E+01	3.441E-01
Os-189(p,x)He-4	62.0	3.299E+01	1.441E+01
Os-189(p,x)He-4	90.0	5.793E+01	8.733E+00
Os-189(p,x)He-4	150.0	7.960E+01	2.163E+01
Os-189(p,x)He-4	800.0	7.762E+02	1.726E+01
Os-189(p,x)He-4	1200.0	1.405E+03	3.511E+01
Os-190(p,x)H-1	62.0	6.875E+02	3.706E+01
Os-190(p,x)H-1	90.0	1.210E+03	3.764E+01
Os-190(p,x)H-1	1200.0	5.993E+03	2.985E+01
Os-190(p,x)H-2	62.0	9.276E+01	1.391E+01
Os-190(p,x)H-2	90.0	1.542E+02	2.313E+01
Os-190(p,x)H-2	1200.0	1.238E+03	4.379E+00
Os-190(p,x)H-3	62.0	2.355E+01	1.657E+00
Os-190(p,x)H-3	90.0	4.569E+01	3.781E+00
Os-190(p,x)H-3	150.0	2.990E+01	2.243E+00
Os-190(p,x)H-3	660.0	1.737E+02	8.400E+00
Os-190(p,x)H-3	1200.0	5.347E+02	3.788E+00
Os-190(p,x)He-3	62.0	2.297E+00	3.165E-01
Os-190(p,x)He-3	90.0	5.095E+00	5.450E-02
Os-190(p,x)He-3	150.0	6.321E+00	2.894E-01
Os-190(p,x)He-3	800.0	5.675E+01	1.942E+00
Os-190(p,x)He-3	1200.0	7.990E+01	2.116E+00
Os-190(p,x)He-4	62.0	2.838E+01	1.166E+01
Os-190(p,x)He-4	90.0	5.108E+01	7.858E+00
Os-190(p,x)He-4	150.0	7.344E+01	2.050E+01
Os-190(p,x)He-4	800.0	7.230E+02	5.181E+00
Os-190(p,x)He-4	1200.0	1.353E+03	1.700E+01
Os-192(p,x)H-1	62.0	6.835E+02	4.058E+01
Os-192(p,x)H-1	90.0	1.203E+03	4.104E+01
Os-192(p,x)H-1	1200.0	5.782E+03	1.015E+02
Os-192(p,x)H-2	62.0	9.060E+01	1.359E+01
Os-192(p,x)H-2	90.0	1.495E+02	2.242E+01
Os-192(p,x)H-2	1200.0	1.224E+03	9.966E+00
Os-192(p,x)H-3	62.0	2.414E+01	1.668E+00
Os-192(p,x)H-3	90.0	4.624E+01	3.799E+00
Os-192(p,x)H-3	150.0	2.992E+01	1.999E+00
Os-192(p,x)H-3	660.0	1.746E+02	9.064E+00
Os-192(p,x)H-3	1200.0	5.522E+02	1.156E+01
Os-192(p,x)He-3	62.0	2.014E+00	2.655E-01
Os-192(p,x)He-3	90.0	4.545E+00	1.443E-01
Os-192(p,x)He-3	150.0	5.792E+00	3.026E-01
Os-192(p,x)He-3	800.0	5.238E+01	1.969E-01
Os-192(p,x)He-3	1200.0	7.430E+01	4.892E-01
Os-192(p,x)He-4	62.0	2.160E+01	9.526E+00
Os-192(p,x)He-4	90.0	3.905E+01	7.339E+00
Os-192(p,x)He-4	150.0	6.220E+01	1.835E+01
Os-192(p,x)He-4	800.0	6.238E+02	1.371E+01
Os-192(p,x)He-4	1200.0	1.251E+03	2.229E+01
Ir-191(p,x)H-1	62.0	6.933E+02	9.418E+00
Ir-191(p,x)H-1	90.0	1.242E+03	3.458E+01
Ir-191(p,x)H-1	1200.0	6.271E+03	9.939E+01
Ir-191(p,x)H-2	62.0	8.763E+01	1.314E+01
Ir-191(p,x)H-2	90.0	1.494E+02	2.241E+01
Ir-191(p,x)H-2	1200.0	1.281E+03	5.009E+00
Ir-191(p,x)H-3	62.0	2.197E+01	8.543E-01
Ir-191(p,x)H-3	90.0	4.106E+01	4.593E+00
Ir-191(p,x)H-3	150.0	2.925E+01	1.477E+00
Ir-191(p,x)H-3	660.0	1.704E+02	4.814E+00
Ir-191(p,x)H-3	1200.0	5.316E+02	4.760E+00
Ir-191(p,x)He-3	62.0	2.670E+00	4.540E-02
Ir-191(p,x)He-3	90.0	5.713E+00	5.697E-01
Ir-191(p,x)He-3	150.0	6.982E+00	6.100E-01
Ir-191(p,x)He-3	800.0	6.062E+01	2.788E+00
Ir-191(p,x)He-3	1200.0	8.397E+01	6.633E-01
Ir-191(p,x)He-4	62.0	3.530E+01	1.215E+01
Ir-191(p,x)He-4	90.0	6.439E+01	1.185E+01
Ir-191(p,x)He-4	150.0	9.178E+01	2.631E+01
Ir-191(p,x)He-4	800.0	7.806E+02	1.981E+01
Ir-191(p,x)He-4	1200.0	1.456E+03	3.733E+01
Ir-193(p,x)H-1	62.0	6.711E+02	1.500E+01
Ir-193(p,x)H-1	90.0	1.204E+03	2.857E+01
Ir-193(p,x)H-1	1200.0	6.043E+03	2.034E+01
Ir-193(p,x)H-2	62.0	8.511E+01	1.277E+01
Ir-193(p,x)H-2	90.0	1.452E+02	2.179E+01
Ir-193(p,x)H-2	1200.0	1.272E+03	2.419E+00
Ir-193(p,x)H-3	62.0	2.264E+01	8.250E-01
Ir-193(p,x)H-3	90.0	4.215E+01	4.654E+00
Ir-193(p,x)H-3	150.0	2.930E+01	1.687E+00
Ir-193(p,x)H-3	660.0	1.725E+02	7.569E+00
Ir-193(p,x)H-3	1200.0	5.492E+02	7.278E+00
Ir-193(p,x)He-3	62.0	2.394E+00	1.522E-02
Ir-193(p,x)He-3	90.0	5.165E+00	6.149E-01
Ir-193(p,x)He-3	150.0	6.428E+00	5.927E-01
Ir-193(p,x)He-3	800.0	5.749E+01	2.390E+00
Ir-193(p,x)He-3	1200.0	7.944E+01	1.324E+00
Ir-193(p,x)He-4	62.0	2.554E+01	9.588E+00
Ir-193(p,x)He-4	90.0	4.702E+01	9.947E+00
Ir-193(p,x)He-4	150.0	7.074E+01	2.068E+01
Ir-193(p,x)He-4	800.0	6.767E+02	7.995E+00
Ir-193(p,x)He-4	1200.0	1.348E+03	1.220E+01
Pt-190(p,x)H-1	62.0	7.978E+02	4.479E+01
Pt-190(p,x)H-1	90.0	1.396E+03	8.070E+01
Pt-190(p,x)H-1	1200.0	6.861E+03	3.004E+02
Pt-190(p,x)H-2	62.0	9.318E+01	1.398E+01
Pt-190(p,x)H-2	90.0	1.598E+02	2.396E+01
Pt-190(p,x)H-2	1200.0	1.326E+03	2.251E+01
Pt-190(p,x)H-3	62.0	1.981E+01	1.199E+00
Pt-190(p,x)H-3	90.0	3.981E+01	5.334E+00

Pt-190(p,x)H-3	150.0	2.783E+01	1.871E+00
Pt-190(p,x)H-3	660.0	1.648E+02	2.657E+00
Pt-190(p,x)H-3	1200.0	5.072E+02	2.278E+01
Pt-190(p,x)He-3	62.0	2.696E+00	3.085E-01
Pt-190(p,x)He-3	90.0	5.973E+00	1.990E-01
Pt-190(p,x)He-3	150.0	7.585E+00	2.358E-01
Pt-190(p,x)He-3	800.0	6.937E+01	2.820E+00
Pt-190(p,x)He-3	1200.0	9.614E+01	2.058E+00
Pt-190(p,x)He-4	62.0	5.641E+01	1.320E+01
Pt-190(p,x)He-4	90.0	1.039E+02	1.189E+01
Pt-190(p,x)He-4	150.0	1.326E+02	2.910E+01
Pt-190(p,x)He-4	800.0	9.604E+02	7.507E+01
Pt-190(p,x)He-4	1200.0	1.680E+03	1.225E+02
Pt-192(p,x)H-1	62.0	7.465E+02	4.335E+01
Pt-192(p,x)H-1	90.0	1.312E+03	6.002E+01
Pt-192(p,x)H-1	1200.0	6.596E+03	1.730E+02
Pt-192(p,x)H-2	62.0	9.036E+01	1.355E+01
Pt-192(p,x)H-2	90.0	1.544E+02	2.315E+01
Pt-192(p,x)H-2	1200.0	1.321E+03	1.328E+01
Pt-192(p,x)H-3	62.0	2.068E+01	1.268E+00
Pt-192(p,x)H-3	90.0	4.110E+01	5.426E+00
Pt-192(p,x)H-3	150.0	2.846E+01	1.932E+00
Pt-192(p,x)H-3	660.0	1.694E+02	9.453E-01
Pt-192(p,x)H-3	1200.0	5.227E+02	1.584E+01
Pt-192(p,x)He-3	62.0	2.404E+00	2.854E-01
Pt-192(p,x)He-3	90.0	5.395E+00	2.067E-01
Pt-192(p,x)He-3	150.0	6.842E+00	4.620E-01
Pt-192(p,x)He-3	800.0	6.486E+01	1.625E+00
Pt-192(p,x)He-3	1200.0	9.021E+01	1.214E+00
Pt-192(p,x)He-4	62.0	3.992E+01	1.004E+01
Pt-192(p,x)He-4	90.0	7.482E+01	6.555E+00
Pt-192(p,x)He-4	150.0	1.047E+02	2.298E+01
Pt-192(p,x)He-4	800.0	8.385E+02	3.663E+01
Pt-192(p,x)He-4	1200.0	1.570E+03	7.351E+01
Pt-194(p,x)H-1	62.0	7.149E+02	4.078E+01
Pt-194(p,x)H-1	90.0	1.277E+03	5.778E+01
Pt-194(p,x)H-1	1200.0	6.350E+03	4.086E+01
Pt-194(p,x)H-2	62.0	8.923E+01	1.338E+01
Pt-194(p,x)H-2	90.0	1.513E+02	2.270E+01
Pt-194(p,x)H-2	1200.0	1.312E+03	8.406E+00
Pt-194(p,x)H-3	62.0	2.166E+01	1.434E+00
Pt-194(p,x)H-3	90.0	4.263E+01	5.851E+00
Pt-194(p,x)H-3	150.0	2.880E+01	2.453E+00
Pt-194(p,x)H-3	660.0	1.707E+02	2.976E+00
Pt-194(p,x)H-3	1200.0	5.421E+02	5.296E+00
Pt-194(p,x)He-3	62.0	2.169E+00	2.636E-01
Pt-194(p,x)He-3	90.0	4.915E+00	2.287E-01
Pt-194(p,x)He-3	150.0	6.301E+00	4.679E-01
Pt-194(p,x)He-3	800.0	5.949E+01	1.211E+00
Pt-194(p,x)He-3	1200.0	8.390E+01	2.722E-01
Pt-194(p,x)He-4	62.0	3.072E+01	8.538E+00
Pt-194(p,x)He-4	90.0	5.719E+01	9.042E+00
Pt-194(p,x)He-4	150.0	8.048E+01	2.284E+01
Pt-194(p,x)He-4	800.0	7.270E+02	1.265E+01
Pt-194(p,x)He-4	1200.0	1.459E+03	2.746E+01
Pt-195(p,x)H-1	62.0	7.004E+02	4.052E+01
Pt-195(p,x)H-1	90.0	1.253E+03	5.350E+01
Pt-195(p,x)H-1	1200.0	6.217E+03	1.335E+01
Pt-195(p,x)H-2	62.0	9.550E+01	1.433E+01
Pt-195(p,x)H-2	90.0	1.547E+02	2.321E+01
Pt-195(p,x)H-2	1200.0	1.305E+03	1.100E+01
Pt-195(p,x)H-3	62.0	2.338E+01	1.613E+00
Pt-195(p,x)H-3	90.0	4.237E+01	3.025E+00
Pt-195(p,x)H-3	150.0	3.439E+01	9.366E+00
Pt-195(p,x)H-3	660.0	1.725E+02	4.573E+00
Pt-195(p,x)H-3	1200.0	5.491E+02	7.468E-01
Pt-195(p,x)He-3	62.0	2.456E+00	2.193E-01
Pt-195(p,x)He-3	90.0	5.286E+00	3.385E-01
Pt-195(p,x)He-3	150.0	6.550E+00	4.280E-01
Pt-195(p,x)He-3	800.0	5.835E+01	8.666E-01
Pt-195(p,x)He-3	1200.0	8.074E+01	1.211E+01
Pt-195(p,x)He-4	62.0	2.725E+01	6.936E+00
Pt-195(p,x)He-4	90.0	5.110E+01	2.786E+00
Pt-195(p,x)He-4	150.0	6.983E+01	1.695E+01
Pt-195(p,x)He-4	800.0	6.788E+02	5.784E+00
Pt-195(p,x)He-4	1200.0	1.393E+03	4.048E+00
Pt-196(p,x)H-1	62.0	6.770E+02	4.226E+01
Pt-196(p,x)H-1	90.0	1.226E+03	4.132E+01
Pt-196(p,x)H-1	1200.0	6.112E+03	6.880E+01
Pt-196(p,x)H-2	62.0	8.806E+01	1.321E+01
Pt-196(p,x)H-2	90.0	1.481E+02	2.221E+01
Pt-196(p,x)H-2	1200.0	1.301E+03	1.157E+01
Pt-196(p,x)H-3	62.0	2.294E+01	1.255E+00
Pt-196(p,x)H-3	90.0	4.399E+01	6.169E+00
Pt-196(p,x)H-3	150.0	3.459E+01	7.448E+00
Pt-196(p,x)H-3	660.0	1.711E+02	4.330E+00
Pt-196(p,x)H-3	1200.0	5.644E+02	3.277E+00
Pt-196(p,x)He-3	62.0	1.998E+00	2.468E-01
Pt-196(p,x)He-3	90.0	4.533E+00	2.516E-01
Pt-196(p,x)He-3	150.0	5.915E+00	5.166E-01
Pt-196(p,x)He-3	800.0	5.680E+01	9.659E-01
Pt-196(p,x)He-3	1200.0	7.700E+01	6.465E-01
Pt-196(p,x)He-4	62.0	2.357E+01	6.736E+00
Pt-196(p,x)He-4	90.0	4.967E+01	9.284E+00
Pt-196(p,x)He-4	150.0	7.042E+01	1.655E+01
Pt-196(p,x)He-4	800.0	6.301E+02	1.290E+01
Pt-196(p,x)He-4	1200.0	1.344E+03	1.570E+01
Pt-198(p,x)H-1	62.0	6.475E+02	3.817E+01
Pt-198(p,x)H-1	90.0	1.185E+03	3.520E+01
Pt-198(p,x)H-1	1200.0	5.857E+03	1.894E+02
Pt-198(p,x)H-2	62.0	8.630E+01	1.294E+01
Pt-198(p,x)H-2	90.0	1.448E+02	2.173E+01
Pt-198(p,x)H-2	1200.0	1.274E+03	2.489E+01
Pt-198(p,x)H-3	62.0	2.402E+01	1.495E+00
Pt-198(p,x)H-3	90.0	4.558E+01	5.703E+00
Pt-198(p,x)H-3	150.0	3.430E+01	4.302E+00
Pt-198(p,x)H-3	660.0	1.736E+02	8.727E+00
Pt-198(p,x)H-3	1200.0	5.734E+02	1.359E+01
Pt-198(p,x)He-3	62.0	2.085E+00	1.632E-01
Pt-198(p,x)He-3	90.0	4.141E+00	2.736E-01
Pt-198(p,x)He-3	150.0	5.504E+00	5.468E-01
Pt-198(p,x)He-3	800.0	4.999E+01	1.099E+00
Pt-198(p,x)He-3	1200.0	7.140E+01	6.477E-01
Pt-198(p,x)He-4	62.0	1.907E+01	5.596E+00
Pt-198(p,x)He-4	90.0	4.013E+01	1.002E+01
Pt-198(p,x)He-4	150.0	7.846E+01	4.683E+01
Pt-198(p,x)He-4	800.0	5.655E+02	2.319E+01
Pt-198(p,x)He-4	1200.0	1.235E+03	5.406E+01
Au-197(p,x)H-1	62.0	6.546E+02	9.819E+01
Au-197(p,x)H-1	90.0	1.195E+03	1.196E+01
Au-197(p,x)H-1	1200.0	6.399E+03	9.598E+02
Au-197(p,x)H-2	62.0	8.600E+01	1.290E+01
Au-197(p,x)H-2	90.0	1.470E+02	2.205E+01
Au-197(p,x)H-2	1200.0	1.345E+03	2.018E+02
Au-197(p,x)H-3	62.0	2.130E+01	3.195E+00
Au-197(p,x)H-3	90.0	4.107E+01	3.114E+00
Au-197(p,x)H-3	150.0	3.035E+01	1.794E+00
Au-197(p,x)H-3	660.0	1.695E+02	2.934E+00
Au-197(p,x)H-3	1200.0	5.616E+02	8.424E+01
Au-197(p,x)He-3	62.0	2.300E+00	3.450E-01
Au-197(p,x)He-3	90.0	5.042E+00	6.767E-01
Au-197(p,x)He-3	150.0	6.474E+00	7.816E-01
Au-197(p,x)He-3	800.0	6.130E+01	9.195E+00
Au-197(p,x)He-3	1200.0	8.300E+01	1.245E+01
Au-197(p,x)He-4	62.0	3.212E+01	4.818E+00
Au-197(p,x)He-4	90.0	7.640E+01	3.308E+01
Au-197(p,x)He-4	150.0	1.016E+02	2.047E+01
Au-197(p,x)He-4	800.0	6.785E+02	1.018E+02
Au-197(p,x)He-4	1200.0	1.454E+03	2.181E+02
Hg-196(p,x)H-1	62.0	7.502E+02	3.782E+01
Hg-196(p,x)H-1	90.0	1.334E+03	4.090E+01
Hg-196(p,x)H-1	1200.0	6.973E+03	1.991E+02
Hg-196(p,x)H-2	62.0	9.078E+01	1.362E+01
Hg-196(p,x)H-2	90.0	1.553E+02	2.330E+01
Hg-196(p,x)H-2	1200.0	1.382E+03	3.519E+01
Hg-196(p,x)H-3	62.0	1.900E+01	1.248E+00
Hg-196(p,x)H-3	90.0	3.850E+01	4.944E+00
Hg-196(p,x)H-3	150.0	2.779E+01	2.138E+00
Hg-196(p,x)H-3	660.0	1.675E+02	1.841E-01
Hg-196(p,x)H-3	1200.0	5.434E+02	6.746E+00
Hg-196(p,x)He-3	62.0	2.345E+00	2.916E-01
Hg-196(p,x)He-3	90.0	5.307E+00	2.804E-01
Hg-196(p,x)He-3	150.0	6.970E+00	4.749E-01
Hg-196(p,x)He-3	800.0	6.931E+01	1.933E+00
Hg-196(p,x)He-3	1200.0	9.486E+01	1.423E+01
Hg-196(p,x)He-4	62.0	3.558E+01	8.270E+00
Hg-196(p,x)He-4	90.0	7.362E+01	1.509E+01
Hg-196(p,x)He-4	150.0	1.121E+02	3.017E+01
Hg-196(p,x)He-4	800.0	8.489E+02	3.282E+01
Hg-196(p,x)He-4	1200.0	1.685E+03	6.523E+01

Hg-198(p,x)H-1	62.0	7.174E+02	3.991E+01
Hg-198(p,x)H-1	90.0	1.287E+03	4.159E+01
Hg-198(p,x)H-1	1200.0	6.642E+03	7.816E+01
Hg-198(p,x)H-2	62.0	8.995E+01	1.349E+01
Hg-198(p,x)H-2	90.0	1.528E+02	2.292E+01
Hg-198(p,x)H-2	1200.0	1.356E+03	1.921E+01
Hg-198(p,x)H-3	62.0	2.045E+01	1.250E+00
Hg-198(p,x)H-3	90.0	4.042E+01	5.498E+00
Hg-198(p,x)H-3	150.0	2.861E+01	2.185E+00
Hg-198(p,x)H-3	660.0	1.698E+02	2.205E+00
Hg-198(p,x)H-3	1200.0	5.547E+02	5.045E+00
Hg-198(p,x)He-3	62.0	2.470E+00	1.947E-01
Hg-198(p,x)He-3	90.0	4.886E+00	2.966E-01
Hg-198(p,x)He-3	150.0	6.473E+00	4.683E-01
Hg-198(p,x)He-3	800.0	6.010E+01	1.937E-01
Hg-198(p,x)He-3	1200.0	8.573E+01	1.057E+00
Hg-198(p,x)He-4	62.0	2.957E+01	6.676E+00
Hg-198(p,x)He-4	90.0	5.817E+01	9.641E+00
Hg-198(p,x)He-4	150.0	9.536E+01	1.475E+01
Hg-198(p,x)He-4	800.0	7.663E+02	1.282E+01
Hg-198(p,x)He-4	1200.0	1.548E+03	2.826E+01
Hg-199(p,x)H-1	62.0	7.228E+02	2.932E+01
Hg-199(p,x)H-1	90.0	1.310E+03	6.373E+01
Hg-199(p,x)H-1	1200.0	6.446E+03	2.345E+01
Hg-199(p,x)H-2	62.0	9.483E+01	1.423E+01
Hg-199(p,x)H-2	90.0	1.562E+02	2.344E+01
Hg-199(p,x)H-2	1200.0	1.332E+03	1.267E+01
Hg-199(p,x)H-3	62.0	2.171E+01	4.034E-01
Hg-199(p,x)H-3	90.0	4.050E+01	3.261E+00
Hg-199(p,x)H-3	150.0	2.895E+01	1.708E+00
Hg-199(p,x)H-3	660.0	1.688E+02	1.253E+00
Hg-199(p,x)H-3	1200.0	5.601E+02	1.176E+00
Hg-199(p,x)He-3	62.0	3.089E+00	1.197E-01
Hg-199(p,x)He-3	90.0	5.150E+00	3.490E-01
Hg-199(p,x)He-3	150.0	6.615E+00	3.495E-01
Hg-199(p,x)He-3	800.0	5.377E+01	7.300E-02
Hg-199(p,x)He-3	1200.0	8.261E+01	1.148E+00
Hg-199(p,x)He-4	62.0	2.758E+01	5.607E+00
Hg-199(p,x)He-4	90.0	4.997E+01	6.564E+00
Hg-199(p,x)He-4	150.0	8.427E+01	9.788E+00
Hg-199(p,x)He-4	800.0	7.455E+02	4.556E+00
Hg-199(p,x)He-4	1200.0	1.473E+03	9.080E+00
Hg-200(p,x)H-1	62.0	6.900E+02	2.900E+01
Hg-200(p,x)H-1	90.0	1.275E+03	4.848E+01
Hg-200(p,x)H-1	1200.0	6.272E+03	4.660E+01
Hg-200(p,x)H-2	62.0	8.834E+01	1.325E+01
Hg-200(p,x)H-2	90.0	1.504E+02	2.256E+01
Hg-200(p,x)H-2	1200.0	1.306E+03	1.958E+02
Hg-200(p,x)H-3	62.0	2.225E+01	1.077E+00
Hg-200(p,x)H-3	90.0	4.218E+01	5.392E+00
Hg-200(p,x)H-3	150.0	2.915E+01	2.472E+00
Hg-200(p,x)H-3	660.0	1.684E+02	1.767E+00
Hg-200(p,x)H-3	1200.0	5.587E+02	6.864E-01
Hg-200(p,x)He-3	62.0	2.921E+00	8.203E-02
Hg-200(p,x)He-3	90.0	4.563E+00	2.538E-01
Hg-200(p,x)He-3	150.0	6.017E+00	4.625E-01
Hg-200(p,x)He-3	800.0	4.777E+01	4.525E-01
Hg-200(p,x)He-3	1200.0	7.677E+01	9.813E-01
Hg-200(p,x)He-4	62.0	2.414E+01	4.352E+00
Hg-200(p,x)He-4	90.0	4.334E+01	7.016E+00
Hg-200(p,x)He-4	150.0	7.299E+01	7.923E+00
Hg-200(p,x)He-4	800.0	7.197E+02	9.391E+00
Hg-200(p,x)He-4	1200.0	1.404E+03	1.506E+01
Hg-201(p,x)H-1	62.0	6.711E+02	2.674E+01
Hg-201(p,x)H-1	90.0	1.255E+03	4.785E+01
Hg-201(p,x)H-1	1200.0	6.119E+03	7.832E+01
Hg-201(p,x)H-2	62.0	9.236E+01	1.385E+01
Hg-201(p,x)H-2	90.0	1.537E+02	2.306E+01
Hg-201(p,x)H-2	1200.0	1.287E+03	1.510E+01
Hg-201(p,x)H-3	62.0	2.527E+01	2.513E+00
Hg-201(p,x)H-3	90.0	4.268E+01	3.047E+00
Hg-201(p,x)H-3	150.0	3.702E+01	1.181E+01
Hg-201(p,x)H-3	660.0	1.699E+02	1.020E+00
Hg-201(p,x)H-3	1200.0	5.640E+02	2.291E+00
Hg-201(p,x)He-3	62.0	3.546E+00	2.504E-01
Hg-201(p,x)He-3	90.0	4.793E+00	3.887E-01
Hg-201(p,x)He-3	150.0	6.213E+00	4.001E-01
Hg-201(p,x)He-3	800.0	4.196E+01	3.971E-01
Hg-201(p,x)He-3	1200.0	7.239E+01	8.069E-01
Hg-201(p,x)He-4	62.0	2.224E+01	2.550E+00
Hg-201(p,x)He-4	90.0	3.824E+01	4.047E+00
Hg-201(p,x)He-4	150.0	6.252E+01	4.550E+00
Hg-201(p,x)He-4	800.0	6.993E+02	1.682E+01
Hg-201(p,x)He-4	1200.0	1.338E+03	3.114E+01
Hg-202(p,x)H-1	62.0	6.478E+02	2.719E+01
Hg-202(p,x)H-1	90.0	1.226E+03	4.030E+01
Hg-202(p,x)H-1	1200.0	5.938E+03	1.423E+02
Hg-202(p,x)H-2	62.0	8.645E+01	1.297E+01
Hg-202(p,x)H-2	90.0	1.487E+02	2.230E+01
Hg-202(p,x)H-2	1200.0	1.255E+03	1.753E+01
Hg-202(p,x)H-3	62.0	2.465E+01	1.176E+00
Hg-202(p,x)H-3	90.0	4.418E+01	5.083E+00
Hg-202(p,x)H-3	150.0	3.462E+01	6.084E+00
Hg-202(p,x)H-3	660.0	1.685E+02	2.527E+01
Hg-202(p,x)H-3	1200.0	5.596E+02	3.721E+00
Hg-202(p,x)He-3	62.0	3.269E+00	1.424E-01
Hg-202(p,x)He-3	90.0	4.219E+00	2.868E-01
Hg-202(p,x)He-3	150.0	5.708E+00	3.105E-01
Hg-202(p,x)He-3	800.0	3.666E+01	8.456E-01
Hg-202(p,x)He-3	1200.0	6.756E+01	2.441E-01
Hg-202(p,x)He-4	62.0	1.963E+01	1.758E+00
Hg-202(p,x)He-4	90.0	3.454E+01	4.896E+00
Hg-202(p,x)He-4	150.0	5.566E+01	1.091E+01
Hg-202(p,x)He-4	800.0	6.761E+02	2.328E+01
Hg-202(p,x)He-4	1200.0	1.265E+03	3.256E+01
Hg-204(p,x)H-1	62.0	6.125E+02	2.084E+01
Hg-204(p,x)H-1	90.0	1.178E+03	2.943E+01
Hg-204(p,x)H-1	1200.0	5.644E+03	2.549E+02
Hg-204(p,x)H-2	62.0	8.394E+01	1.259E+01
Hg-204(p,x)H-2	90.0	1.453E+02	2.180E+01
Hg-204(p,x)H-2	1200.0	1.216E+03	4.738E+01
Hg-204(p,x)H-3	62.0	2.622E+01	1.609E+00
Hg-204(p,x)H-3	90.0	4.542E+01	5.255E+00
Hg-204(p,x)H-3	150.0	3.501E+01	5.896E+00
Hg-204(p,x)H-3	660.0	1.684E+02	3.199E+00
Hg-204(p,x)H-3	1200.0	5.628E+02	1.024E+01
Hg-204(p,x)He-3	62.0	3.534E+00	2.706E-01
Hg-204(p,x)He-3	90.0	3.891E+00	3.097E-01
Hg-204(p,x)He-3	150.0	5.324E+00	3.209E-01
Hg-204(p,x)He-3	800.0	2.729E+01	3.359E-02
Hg-204(p,x)He-3	1200.0	6.126E+01	1.898E+00
Hg-204(p,x)He-4	62.0	1.534E+01	9.065E-01
Hg-204(p,x)He-4	90.0	2.593E+01	3.604E+00
Hg-204(p,x)He-4	150.0	4.651E+01	1.373E+01
Hg-204(p,x)He-4	800.0	6.248E+02	3.182E+01
Hg-204(p,x)He-4	1200.0	1.137E+03	6.596E+01
Tl-203(p,x)H-1	62.0	6.460E+02	2.085E+01
Tl-203(p,x)H-1	90.0	1.227E+03	1.012E+01
Tl-203(p,x)H-1	1200.0	6.148E+03	6.450E+01
Tl-203(p,x)H-2	62.0	8.315E+01	1.247E+01
Tl-203(p,x)H-2	90.0	1.465E+02	2.197E+01
Tl-203(p,x)H-2	1200.0	1.269E+03	1.527E+00
Tl-203(p,x)H-3	62.0	2.313E+01	2.083E+00
Tl-203(p,x)H-3	90.0	4.013E+01	4.539E+00
Tl-203(p,x)H-3	150.0	3.073E+01	2.135E+00
Tl-203(p,x)H-3	660.0	1.681E+02	2.154E-01
Tl-203(p,x)H-3	1200.0	5.581E+02	2.585E+00
Tl-203(p,x)He-3	62.0	4.285E+00	6.341E-01
Tl-203(p,x)He-3	90.0	4.805E+00	6.084E-01
Tl-203(p,x)He-3	150.0	6.407E+00	5.867E-01
Tl-203(p,x)He-3	800.0	3.565E+01	7.661E-01
Tl-203(p,x)He-3	1200.0	7.195E+01	3.124E-01
Tl-203(p,x)He-4	62.0	3.414E+01	1.283E+01
Tl-203(p,x)He-4	90.0	6.803E+01	3.858E+01
Tl-203(p,x)He-4	150.0	8.849E+01	2.494E+01
Tl-203(p,x)He-4	800.0	7.589E+02	1.459E+01
Tl-203(p,x)He-4	1200.0	1.349E+03	1.588E+01
Tl-205(p,x)H-1	62.0	6.191E+02	2.857E+01
Tl-205(p,x)H-1	90.0	1.200E+03	1.101E+01
Tl-205(p,x)H-1	1200.0	5.880E+03	1.235E+02
Tl-205(p,x)H-2	62.0	8.165E+01	1.225E+01
Tl-205(p,x)H-2	90.0	1.434E+02	2.151E+01
Tl-205(p,x)H-2	1200.0	1.234E+03	1.570E+01
Tl-205(p,x)H-3	62.0	2.502E+01	2.646E+00
Tl-205(p,x)H-3	90.0	4.181E+01	4.965E+00
Tl-205(p,x)H-3	150.0	3.099E+01	1.852E+00
Tl-205(p,x)H-3	660.0	1.690E+02	2.241E+00
Tl-205(p,x)H-3	1200.0	5.598E+02	1.208E+01
Tl-205(p,x)He-3	62.0	4.201E+00	7.124E-01
Tl-205(p,x)He-3	90.0	4.401E+00	6.081E-01

Tl-205(p,x)He-3	150.0	5.875E+00	5.175E-01
Tl-205(p,x)He-3	800.0	2.939E+01	5.378E-01
Tl-205(p,x)He-3	1200.0	6.428E+01	6.501E-01
Tl-205(p,x)He-4	62.0	2.368E+01	7.545E+00
Tl-205(p,x)He-4	90.0	4.705E+01	2.369E+01
Tl-205(p,x)He-4	150.0	6.772E+01	1.779E+01
Tl-205(p,x)He-4	800.0	6.971E+02	8.049E+00
Tl-205(p,x)He-4	1200.0	1.235E+03	3.063E+01
Pb-204(p,x)H-1	62.0	7.108E+02	1.678E+01
Pb-204(p,x)H-1	90.0	1.316E+03	3.180E+01
Pb-204(p,x)H-1	1200.0	6.375E+03	9.562E+02
Pb-204(p,x)H-2	62.0	8.387E+01	1.258E+01
Pb-204(p,x)H-2	90.0	1.445E+02	2.167E+01
Pb-204(p,x)H-2	1200.0	1.278E+03	1.918E+02
Pb-204(p,x)H-3	62.0	2.286E+01	5.431E-01
Pb-204(p,x)H-3	90.0	4.204E+01	2.714E+00
Pb-204(p,x)H-3	150.0	2.963E+01	1.718E+00
Pb-204(p,x)H-3	660.0	1.700E+02	2.766E+00
Pb-204(p,x)H-3	1200.0	5.560E+02	8.340E+01
Pb-204(p,x)He-3	62.0	4.579E+00	6.868E-01
Pb-204(p,x)He-3	90.0	4.904E+00	7.356E-01
Pb-204(p,x)He-3	150.0	6.574E+00	9.860E-01
Pb-204(p,x)He-3	800.0	3.347E+01	5.020E+00
Pb-204(p,x)He-3	1200.0	7.309E+01	1.096E+01
Pb-204(p,x)He-4	62.0	2.959E+01	4.439E+00
Pb-204(p,x)He-4	90.0	5.079E+01	7.619E+00
Pb-204(p,x)He-4	150.0	8.631E+01	1.295E+01
Pb-204(p,x)He-4	800.0	8.428E+02	1.264E+02
Pb-204(p,x)He-4	1200.0	1.417E+03	2.126E+02
Pb-206(p,x)H-1	62.0	6.824E+02	7.016E+00
Pb-206(p,x)H-1	90.0	1.287E+03	3.272E+01
Pb-206(p,x)H-1	1200.0	6.115E+03	9.172E+02
Pb-206(p,x)H-2	62.0	8.313E+01	1.247E+01
Pb-206(p,x)H-2	90.0	1.434E+02	2.150E+01
Pb-206(p,x)H-2	1200.0	1.256E+03	1.884E+02
Pb-206(p,x)H-3	62.0	2.477E+01	2.186E-01
Pb-206(p,x)H-3	90.0	4.378E+01	2.060E+00
Pb-206(p,x)H-3	150.0	3.044E+01	1.690E+00
Pb-206(p,x)H-3	660.0	1.708E+02	2.562E+01
Pb-206(p,x)H-3	1200.0	5.625E+02	8.437E+01
Pb-206(p,x)He-3	62.0	4.250E+00	6.375E-01
Pb-206(p,x)He-3	90.0	4.607E+00	6.911E-01
Pb-206(p,x)He-3	150.0	6.224E+00	9.336E-01
Pb-206(p,x)He-3	800.0	3.101E+01	4.651E+00
Pb-206(p,x)He-3	1200.0	6.823E+01	1.023E+01
Pb-206(p,x)He-4	62.0	2.447E+01	3.671E+00
Pb-206(p,x)He-4	90.0	4.081E+01	6.121E+00
Pb-206(p,x)He-4	150.0	6.934E+01	1.040E+01
Pb-206(p,x)He-4	800.0	7.598E+02	1.140E+02
Pb-206(p,x)He-4	1200.0	1.320E+03	1.980E+02
Pb-207(p,x)H-1	62.0	6.769E+02	8.054E+00
Pb-207(p,x)H-1	90.0	1.282E+03	3.421E+01
Pb-207(p,x)H-1	1200.0	5.990E+03	8.985E+02
Pb-207(p,x)H-2	62.0	8.629E+01	1.294E+01
Pb-207(p,x)H-2	90.0	1.454E+02	2.181E+01
Pb-207(p,x)H-2	1200.0	1.240E+03	1.861E+02
Pb-207(p,x)H-3	62.0	2.614E+01	1.609E+00
Pb-207(p,x)H-3	90.0	4.392E+01	1.012E+00
Pb-207(p,x)H-3	150.0	3.192E+01	7.454E-01
Pb-207(p,x)H-3	660.0	1.706E+02	1.762E+00
Pb-207(p,x)H-3	1200.0	5.695E+02	8.543E+01
Pb-207(p,x)He-3	62.0	4.479E+00	6.718E-01
Pb-207(p,x)He-3	90.0	4.729E+00	7.093E-01
Pb-207(p,x)He-3	150.0	6.278E+00	9.416E-01
Pb-207(p,x)He-3	800.0	2.912E+01	4.369E+00
Pb-207(p,x)He-3	1200.0	6.559E+01	9.839E+00
Pb-207(p,x)He-4	62.0	2.680E+01	4.021E+00
Pb-207(p,x)He-4	90.0	4.667E+01	7.000E+00
Pb-207(p,x)He-4	150.0	6.936E+01	1.040E+01
Pb-207(p,x)He-4	800.0	7.190E+02	1.078E+02
Pb-207(p,x)He-4	1200.0	1.273E+03	1.910E+02
Pb-208(p,x)H-1	62.0	6.530E+02	9.795E+01
Pb-208(p,x)H-1	90.0	1.258E+03	3.745E+01
Pb-208(p,x)H-1	1200.0	5.875E+03	8.812E+02
Pb-208(p,x)H-2	62.0	8.540E+01	1.281E+01
Pb-208(p,x)H-2	90.0	1.455E+02	2.183E+01
Pb-208(p,x)H-2	1200.0	1.224E+03	1.836E+02
Pb-208(p,x)H-3	62.0	2.740E+01	4.110E+00
Pb-208(p,x)H-3	90.0	4.671E+01	1.449E+00
Pb-208(p,x)H-3	150.0	3.320E+01	4.980E+00
Pb-208(p,x)H-3	660.0	1.700E+02	2.550E+01
Pb-208(p,x)H-3	1200.0	5.740E+02	8.611E+01
Pb-208(p,x)He-3	62.0	3.525E+00	5.287E-01
Pb-208(p,x)He-3	90.0	4.382E+00	6.573E-01
Pb-208(p,x)He-3	150.0	5.898E+00	8.847E-01
Pb-208(p,x)He-3	800.0	2.829E+01	4.243E+00
Pb-208(p,x)He-3	1200.0	6.343E+01	9.514E+00
Pb-208(p,x)He-4	62.0	2.518E+01	3.778E+00
Pb-208(p,x)He-4	90.0	4.017E+01	6.026E+00
Pb-208(p,x)He-4	150.0	6.435E+01	9.652E+00
Pb-208(p,x)He-4	800.0	6.836E+02	1.025E+02
Pb-208(p,x)He-4	1200.0	1.226E+03	1.838E+02
Bi-209(p,x)H-1	62.0	7.073E+02	1.061E+02
Bi-209(p,x)H-1	90.0	1.297E+03	1.946E+02
Bi-209(p,x)H-1	1200.0	6.114E+03	8.097E+01
Bi-209(p,x)H-2	62.0	9.500E+01	1.425E+01
Bi-209(p,x)H-2	90.0	1.530E+02	2.295E+01
Bi-209(p,x)H-2	1200.0	1.260E+03	9.489E+00
Bi-209(p,x)H-3	62.0	2.720E+01	4.080E+00
Bi-209(p,x)H-3	90.0	4.500E+01	6.750E+00
Bi-209(p,x)H-3	150.0	3.239E+01	2.062E+00
Bi-209(p,x)H-3	660.0	1.730E+02	3.776E+00
Bi-209(p,x)H-3	1200.0	5.702E+02	8.553E+01
Bi-209(p,x)He-3	62.0	2.580E+00	3.870E-01
Bi-209(p,x)He-3	90.0	8.000E+00	1.200E+00
Bi-209(p,x)He-3	150.0	6.930E+00	1.039E+00
Bi-209(p,x)He-3	800.0	2.785E+01	4.177E+00
Bi-209(p,x)He-3	1200.0	3.980E+01	5.970E+00
Bi-209(p,x)He-4	62.0	3.414E+01	5.121E+00
Bi-209(p,x)He-4	90.0	8.720E+01	1.308E+01
Bi-209(p,x)He-4	150.0	1.361E+02	2.041E+01
Bi-209(p,x)He-4	800.0	7.680E+02	1.152E+02
Bi-209(p,x)He-4	1200.0	1.084E+03	1.626E+02

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