NURESAFE WP1.3
BWR ATWS WITH UNCERTAINTY QUANTIFICATION

Status of KIT contribution

J. Jimenez, V. Sanchez

Presented by J. Jimenez

victor.sanchez@kit.edu
or
javier.jimenez@kit.edu

Outline

- **Coupling scripts in the svn repository**

- **New INTERP damping function tested.**

- **Preliminary coupled results.**

- **Conclusion & Outlook**

Coupling scripts in the svn repository

Coupling scripts in the svn repository

- **Several coupling scripts have been added in the svn repository as well as the corresponding input decks.**

- **They are going to be use to complete the calculations.**

  ATHLET_COBRA-TF (GRS)   **DYN3D_COBRA-TF (GRS-KIT)**
  ATHLET_DYN3D (GRS)   **DYN3D_SCF (KIT)**

- **Some tests cases with simplified geometry were added:**
  - recmini25_hfp, recmini25_hzp, hexmini7_hfp

- **The input decks for O2 are still not uploaded to due doubts in possible conflicts with the non-disclosure agreement.**

New INTERP damping function

New INTERP damping function

- **The new applyDamp method in INTERP2_5D has been implemented in several coupling schemes.**

- **The idea is to damp the feedback coupling iterations between N-TH codes to speed up convergence in Steady State.**

- **Specially needed for BWR problems where TH feedback is very strong.**

$$T = factor*Tnew + (1-factor)*Told$$
$$factor =\sim 0.7$$

- **User input option in the python scripts has been added: do_damping=1**

- **Tested between DYN3D-SCF; CRONOS-SCF; DYN3D-FLICA4 and DYN3D-CTF**
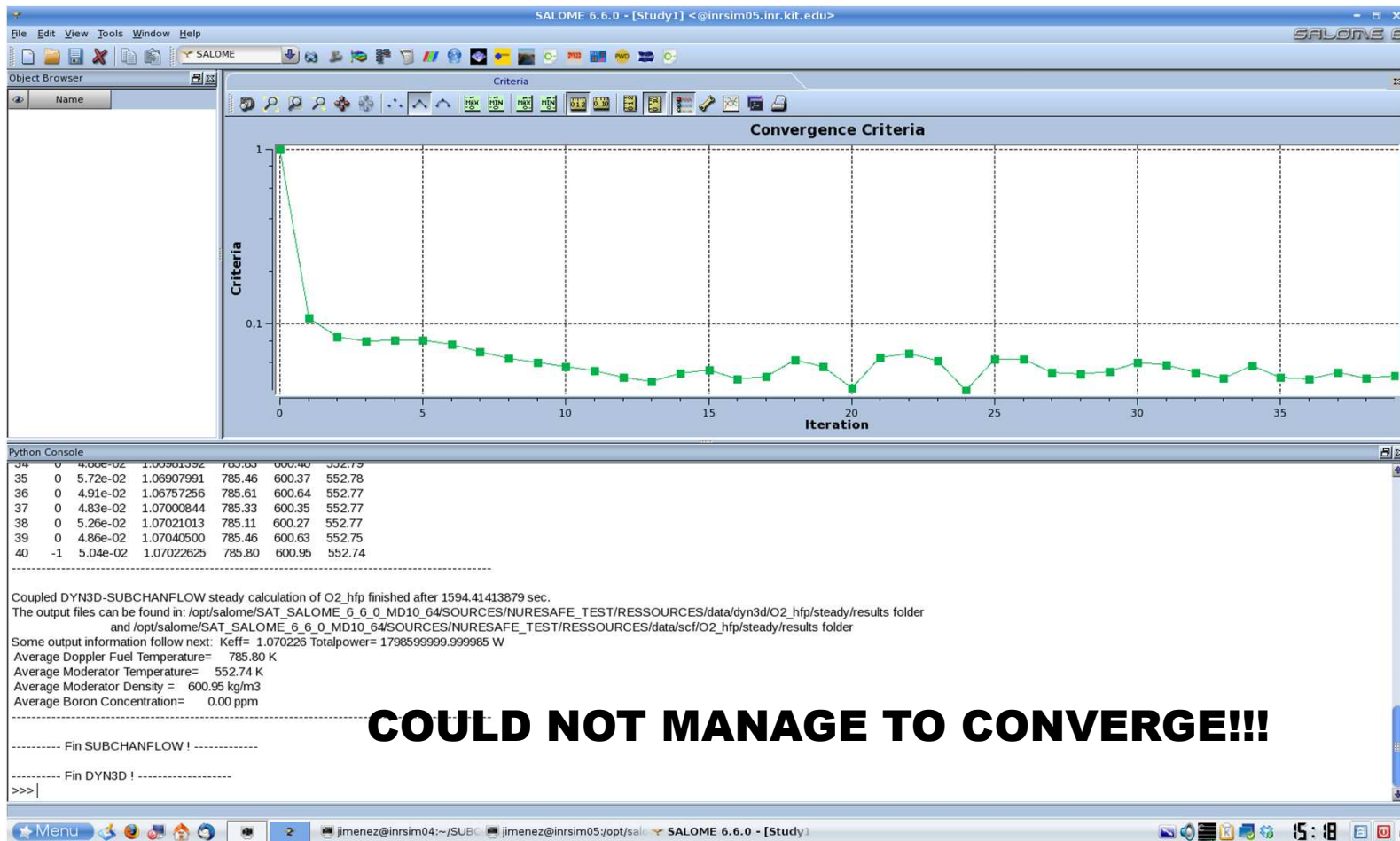
Preliminary DYN3D-CTF and DYN3D-SCF results for the HFP SS

Preliminary results DYN3D_COBRA-TF

- **Using the latest NEMTAB library delivered in December 2014 by PSU.**

- **Coupling scripts in the svn repository under SAT/TEST/DYN3D_CTF/.**

- **Note: The COBRA-TF component can not be compiled in MDV2010.2, too old native gfortran. MAGEIA 4 was used instead with SALOME 6.6.0 (gfortran 4.8.2).**

- **Kostadin Ivanov promised a new library on 16.2.2015, not yet received.**
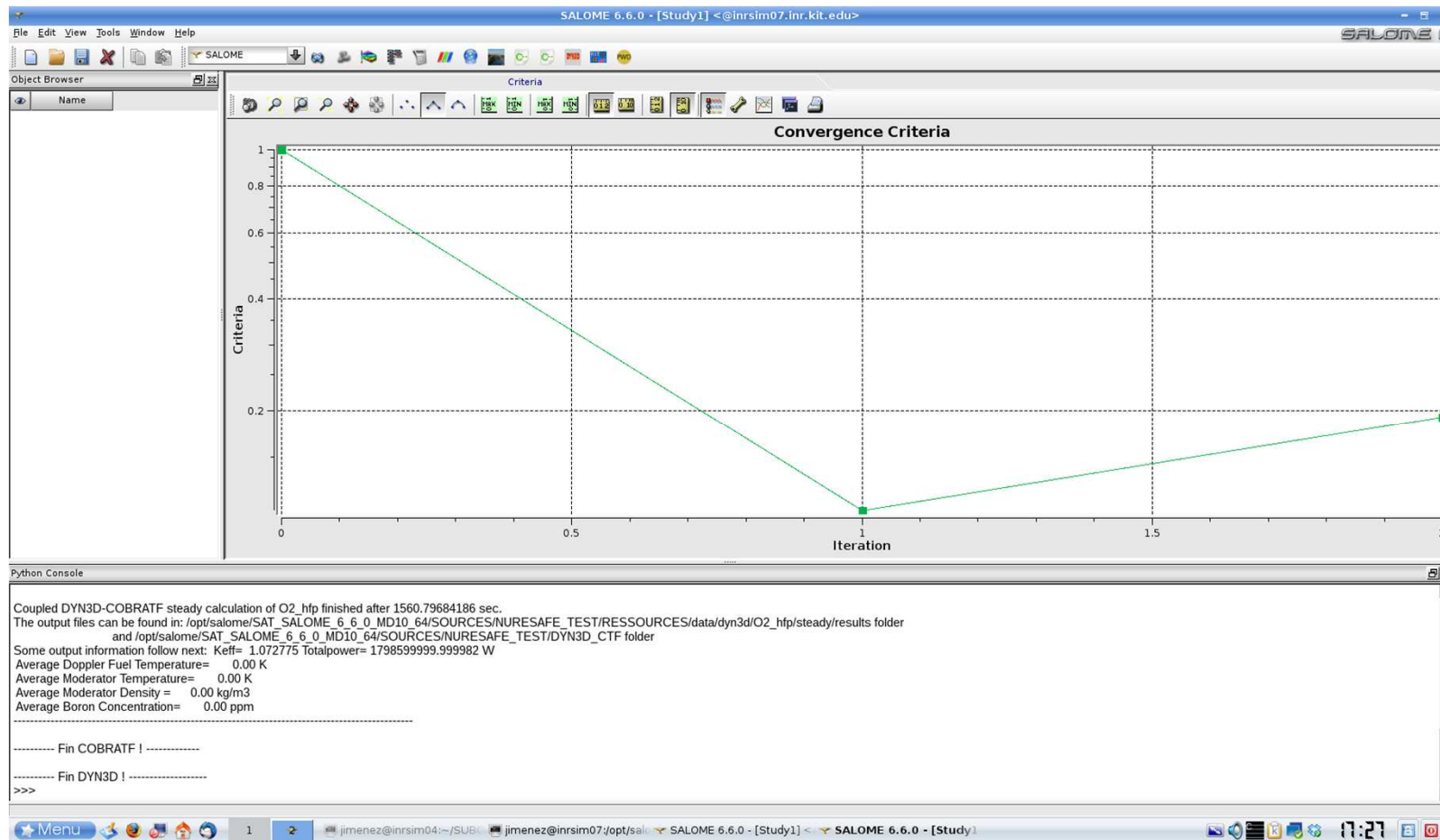
Preliminary results DYN3D_SCF

- **Coupling scripts in the svn repository under SAT/TEST/DYN3D_SCF/**

Preliminary results DYN3D_SCF

- **Coupling scripts in the svn repository.**

- **First coupled iteration, It seems that the data is not transferred fine and there is only two N-TH iterations**

- **The obtained results still have not physical meaning.**
- **Keff should be close to 1.000 as it is a real HFP plant condition.**
- **The DYN3D_SCF values are from a not converged calculation.**
- **The DYN3D_COBRA-TF results are very preliminary as it seems that no real feedback is exchanged. Flat densities and temperatures fields.**

	DYN3D-SCF	DYN3D-CTF
Keff	1.07022~1.06757	1.07277
Av. TDOP	785.80 K	-
Av. DMOD	600.95 kg/m^3	-
Av. TMOD	552.74 K	-

Conclusions and Outlook

- **The coupling scripts have been updated.**
  - Now all the coupling scripts to perform the simulations are available.
- **Successful testing of the new function implemented in INTERP**
- **First coupled results, still need to be improved.**

FUTURE WORK

- **In the next months:**
  - Waiting for a proper set of XS libraries for the O2 (KTH/PSU?).

THANKS FOR YOUR ATTENTION