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Erratum: "Limits on Neutrino Emission from GRB 221009A from MeV to PeV Using the IceCube Neutrino Observatory" (2023, ApJL, 946, L26)

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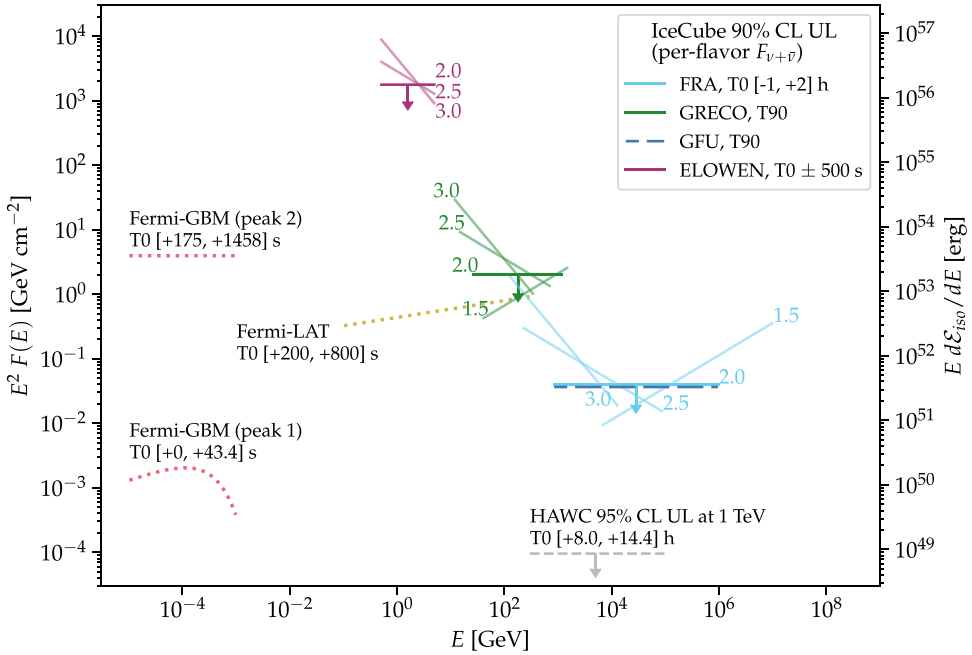

Figure 1. Gamma-ray observations and $F_{\nu+\bar{\nu}}$ upper limits on the time-integrated neutrino flux of GRB 221009A. We show the γ-ray observations from Fermi Gamma-ray Burst Monitor (GBM; Lesage et al. 2022) and Fermi Large Area Telescope (LAT; Bissaldi et al. 2022) as well as upper limits from HAWC (Ayala 2022). The Fermi-GBM result covering the prompt phase ("peak 2") had no reported spectral fit, so it is shown here at $\gamma = 2.0$ for visualization purposes. The upper limits on the time-integrated neutrino flux are shown for various spectral indices as indicated by the numbers. The right axis shows the differential isotropic equivalent energy $d\mathcal{E}_{\rm iso}/dE$.

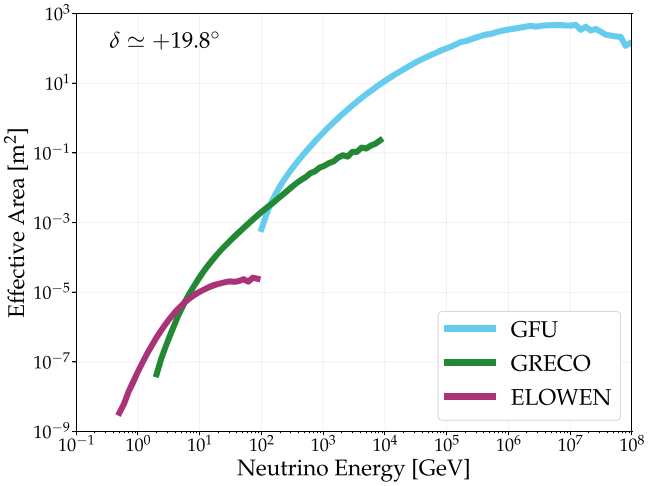

Figure A1. The all-flavor $\nu + \bar{\nu}$ averaged effective area for neutrinos from the direction of GRB 221009A for various data sets used in this Letter. The GRECO and ELOWEN samples are sensitive to all neutrino flavors, while the GFU sample only includes muon-neutrino-induced muons that traverse the detector as signal events.

The flux upper limit values calculated using the GeV Reconstructed Events with Containment for Oscillations (GRECO) Astronomy data set reported in the published Letter are underestimated by a factor of 2. This factor corrects for the averaging of the neutrino and antineutrino effective areas, which in turn increases the previously reported flux upper limits by this factor. Additionally, in the published Letter the flux upper limits calculated using Extremely Low-Energy (ELOWEN) event sample were reported as all-flavor while the other data sets showed per-flavor, which decreases the previously reported upper limits by a factor of 3. Figures 1 and A1, and the Table 2 including these corrections are listed below, with ELOWEN, GRECO, and Gamma-ray Follow-Up (GFU) upper limits reported as per-flavor fluxes and effective areas shown as all-flavor $\nu + \bar{\nu}$ averaged. Here $F_{\nu+\bar{\nu}}$ represents the combined neutrino and antineutrino fluxes.

Table 2
Revised Upper Limits (UL) on the Time-integrated Neutrino Flux of GRB 221009A for the GRECO and ELOWEN Analyses

Data Set	Time Window and Index[a]		90% C.L. Upper Limits (ULs) on the Time-integrated Neutrino Flux $F_{\nu+\bar{\nu}}(E)$				
			Power Law $F_{\nu+\bar{\nu}}(E) \propto E^{-\gamma}$: Per-flavor ULs Show $E^2F_{\nu+\bar{\nu}}(E)$ [GeV cm^{-2}] at E_0				
			E_0	$\gamma = 1.5$	$\gamma = 2.0$	$\gamma = 2.5$	$\gamma = 3.0$
GRECO	T90 phase	*(c)*	1 TeV	2.104	2.030	1.122	0.348
	[T0 − 200 s, T0 + 2000 s]	*(d)*		2.774	2.676	1.480	0.458
ELOWEN	T0 ± 500 s	*(f)*	1 GeV	⋯	1.8×10^3	2.9×10^3	0.47×10^4
	[T0 − 200 s, T0 + 2000 s]	*(d)*		⋯	2.6×10^3	0.43×10^4	0.67×10^4

Notes. The results are given for the energy-scaled time-integrated per-flavor neutrino flux, $E^2F_{\nu+\bar{\nu}}(E)$, at a reference energy E_0 depending on the data set. The upper limits from the GFU and SNDAQ analyses presented in the published Letter remain unchanged. See the main text and table caption in the published Letter for further details.
[a] The different time windows are discussed in Section 4 and are referenced by their inline text indices.

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