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Neutrinos and UHECR from GRB internal shock scenarios

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Gamma-Ray Bursts (GRBs) are among the brightest transients in our universe. Given the large amount of energy they release they have been long discussed as sources of ultra-high-energy cosmic rays (UHECR) - A hypothesis which is challenged by current IceCube neutrino limits. Assuming GRBs to power the UHECR flux, we study different engine realisations in multi-collision internal shock models and compute the in-source UHECR composition required to fit the observed spectra. Explicitly calculating the corresponding prompt and cosmogenic neutrino fluxes for the different scenarios, we show how (future) experiments might be used to discriminate between different scenarios and which parameter space is ruled out by neutrino observations.

Collaboration name

Primary author: RUDOLPH, Annika (DESY Zeuthen)

Co-authors: WINTER, Walter (DESY); FEDYNITCH, Anatoli (DESY Zeutehn); BONCIOLI, denise (INFN Laboratori Nazionali del Gran Sasso); HEINZE, Jonas

Presenter: RUDOLPH, Annika (DESY Zeuthen)

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