

## Low-luminosity gamma-ray bursts as a common origin of cosmic rays across the ankle and diffuse neutrinos at the highest energies

The origin of Ultra-High Energy Cosmic Rays (UHECRs) is still unknown. Gamma-Ray Bursts (GRBs) are considered as potential sources as they belong to the most energetic events observed to date. However, conventional GRB scenarios are strongly constrained by the non-observation of associated astrophysical neutrinos. On the other hand, hidden accelerators such as low-luminosity GRBs (LLGRBs) can ameliorate the constraints.

We show that the population of LLGRBs is not only consistent with current constraints, but can even describe the UHECR spectrum and composition across the ankle as well as neutrino data simultaneously. We explicitly compute the nuclear cascade in the source and stress that the sub-ankle component is directly related to nucleon and neutrino production in the nuclear cascade. We deduce source properties such as the baryonic loading or the cosmological event rate.

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