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Probing the transition between Galactic and extragalactic cosmic rays with a multi-messenger approach

The transition energy between Galactic and extragalactic cosmic rays (CRs) remains an open question. Thanks to the new generation of observatories, observational windows have opened in PeV energies in neutrinos (IceCube, GVD and KM3NeT) and gamma rays (HAWC, LHAASO), complementing CR measurements in this energy range. This expanded dataset provides a more comprehensive framework for investigating the origins of CRs.

In this work we explore the transition between Galactic and extragalactic CRs using a multi-messenger approach. We model the distribution of extragalactic CRs in the Milky Way and compute the spectra of gamma rays and neutrinos produced during their propagation. Our results are compared with the latest observations, and we discuss future prospects for disentangling Galactic and extragalactic contributions to the CR spectrum.

Collaboration(s)

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