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Recent IceCube results on the origin of cosmic neutrinos

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IceCube's discovery of the astrophysical neutrino flux in the TeV-PeV range marked a crucial milestone in the development of high-energy neutrino astronomy. Recent searches identified the blazar TXS 0506+056 and the Seyfert Galaxy NGC 1068 as the first candidates for extragalactic neutrino emitters, standing out above the largely isotropic neutrino flux. While both objects are classified as Active Galactic Nuclei, their neutrino emission spectra differ substantially: TXS 0506+056 emits neutrinos with a hard energy spectrum, whereas NGC 1068 emits neutrinos with a soft spectrum. This difference hints at multiple source populations, adding complexity to the cosmic puzzle we aim to solve. Expanding our understanding of the neutrino sky, IceCube now confirmed the long-sought galactic neutrino flux in addition to the dominant extragalactic flux. Multiple models for galactic neutrino emission were tested, but no clear preference of one model compared to the others was found. In this talk, we will present an overview over these recent IceCube results on the origin of the galactic and extragalactic neutrino flux.

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