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Search for PeV Photons with IceTop and IceCube

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We present results of a search for galactic PeV gamma rays with the IceCube observatory, presently the most sensitive facility for PeV gamma-ray sources in the Southern Hemisphere. This includes a search for point sources over IceCube's field of view, as well as tests for correlations with TeV sources detected by H.E.S.S. and neutrino events from IceCube's high energy starting event sample, with the goal to constrain the Galactic component to the astrophysical neutrino flux observed by IceCube. In addition, we search for correlations of PeV gamma rays with the Galactic plane, using the pion decay component of the Fermi-LAT diffuse emission model as a spatial template. As cosmic rays producing such gamma rays are necessarily an order of magnitude greater in energy, this result provides a new constraint on the galactic source contribution to the cosmic ray flux above the "knee".

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