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Search for diffuse neutrino emission from the Galactic Plane with 7 years of IceCube data.

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The origin of high-energy astrophysical neutrinos measured by the IceCube Neutrino Observatory remains a mystery despite extensive searches for multimessenger correlations. In particular, no point sources have been identified so far. However a likely source for diffuse neutrino emission are cosmic-ray interactions in the galactic plane. Due to the excellent pointing of their track-like signature, muon neutrino induced muons are an ideal channel for measuring spatial correlations. Two methods were developed to test for a spatially-extended flux from the entire galactic plane, both maximum likelihood fits but with different background estimation techniques. We consider three templates for galactic neutrino emission based primarily on gamma-ray observations and models that cover a wide range of possibilities. We present constraints from seven years of IceCube Neutrino Observatory muon data on the neutrino flux coming from the galactic plane.

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