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The Origin of IceCube Astrophysical Neutrinos

Recent detection of high-energy neutrinos (approximately 30 TeV - 1PeV range), most likely from astrophysical sources, by IceCube neutrino observatory ushers the era of Neutrino Astronomy. Poor angular resolutions of the dominantly cascade-type events prohibit identification of the sources, however. A cluster of 5 cascade events near the Galactic Center, although statistically not significant with current data, and an additional 3 cascade events correlated with the Fermi Bubbles hint plausible Galactic origin of a subset of the neutrino events detected by IceCube. An additional, most likely extragalactic, flux component is required to explain the full published data set. Together with neutrino fluxes from the Galactic Center activity and the resulting Fermi Bubbles it will be shown that an extragalactic neutrino flux, most likely from relativistic blast waves of exploding stars, could explain IceCube detection in a multi-source-class scenario.

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