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Search for High-Energy Neutrinos from TDE-like Flares with IceCube

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The collected data of IceCube, a cubic kilometre neutrino detector array in the antarctic ice, reveal a diffuse flux of astrophysical neutrinos. The sources of these neutrinos however have yet to be discovered. Recently, high-energy neutrino alerts, sent out by IceCube in real time, were observed in coincidence with two (likely) Tidal Disruption Events (TDEs). A follow-up study found a broader sample of TDE-like flares, radiation outbursts from supermassive black holes that accrete at an enhanced rate, to be correlated at 3.7σ with IceCube's high-energy neutrino alerts. This does suggest a correlation also at lower energies. In this contribution I will present studies of a stacking analysis looking for IceCube neutrinos from these TDE-like flares, using the same catalogue and a sample of muon track events, testing the correlation at energies from $\mathcal{O}(100)$ GeV to $\mathcal{O}(10)$ TeV.

Collaboration name

IceCube

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