

A model-independent analysis of neutrino flares detected in IceCube from X-ray selected blazars

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Blazars are among the most powerful steady sources in the Universe. Multi-messenger searches from blazars have traditionally focused on their gamma-ray emission, which can be produced simultaneously with neutrinos in photohadronic interactions. However, X-ray data can be equally vital to constrain the SED of these sources, since the hadronically co-produced gamma-rays get absorbed by the ambient photon fields and cascade down to X-ray energies before escaping.

In this work, we test the time-dependent neutrino emission potential of 1000 X-ray bright blazars by performing an untriggered search for neutrino flares from their direction in 10 years of IceCube data. The best-fit flare parameters are obtained using an unbinned likelihood maximization, and the binomial test statistic is used to search for statistically significant emission from a sub-population of the sources.

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