

Gamma-ray lightcurve correlation search for IceCube neutrinos from TXS 0506+056 and cumulative search from blazar flares

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Blazars are active galactic nuclei which have their relativistic particle jet pointing towards Earth and have been observed to emit gamma rays to very high energies. They are also candidates for the yet-unknown accelerators of ultra-high-energy cosmic rays. In such a scenario, their gamma-ray emission might be associated with neutrinos produced by hadronic interactions in the jet. Correlating the astrophysical neutrinos detected by IceCube, a cubic-kilometre neutrino telescope at the South Pole, with the gamma-ray emission from blazars could therefore reveal the origin of cosmic rays. In our method we focus on periods where blazars show an enhanced gamma-ray flux, as measured by Fermi-LAT, thereby reducing the background of the search. We present results for TXS 0506+056, using nearly 10 years of IceCube data and discuss them in the context of other recent analyses on this source. Further we give an outlook on applying this method in a stacked search for the combined emission from a selection of variable Fermi blazars.

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