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Blazars as a potential source of very-high-energy astrophysical neutrinos

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Since the discovery of very-high-energy (E ≥ 100 TeV) astrophysical neutrinos in the 2010s by the *IceCube* neutrino observatory, their origin remains largely unknown. In our work, we investigate blazars —active galaxies with their relativistic jets pointing very close to the Earth —as potential sources of the neutrinos observed by *IceCube*. We use the brightest blazar flare in blazar 3C 454.3 that occurred in November 2010, when it became the most luminous object in the whole gamma-ray sky, as a testbed. We analyse a rich set of then-collected multi-wavelength data (from infrared to gamma-ray range) and model the flare in order to predict the expected neutrino flux from similar blazar flares and use the publicly available catalogue of the detected *IceCube* neutrinos to test our theoretical predictions.

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