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Search for Neutrino Emission from X-ray Binaries with IceCube

The observation of very-high-energy gamma rays from X-ray binaries implies the possibility that they are cosmic ray (CR) sources in the Milky Way. The compact object in a binary system, e.g. a neutron star or black hole, can be the site for CR acceleration. Interactions of CRs can happen in the jet of the compact object, the wind, or the atmosphere of the companion star which produce high-energy photons and neutrinos. As neutrinos act as the smoking-gun of hadronic mechanisms in the source, we perform a time-dependent analysis searching for neutrino emission from X-ray binaries with IceCube. In this analysis, we make use of lightcurves of those sources, looking for flaring features in the 10 yr IceCube muon neutrino data.

Mini-abstract

A time-dependent search for neutrino emission from X-ray binaries with IceCube.

Experiment/Collaboration

IceCube

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