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Search for GeV counterparts to high-energy IceCube neutrinos

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IceCube has made significant progress in identifying astrophysical sources of high-energy neutrinos. However, the majority of the majority of the astrophysical flux remains unexplained, prompting further investigation. To improve our understanding of this flux and its sources, it is important to investigate the presence of a component at lower neutrino energies. To this end, we propose a study that searches for GeV neutrinos associated with neutrino events above 60 TeV of reconstructed energy. Since the specialized event selection sensitive in this range is dominated by atmospheric backgrounds, we focus on a hypothesis of short transient neutrino sources, which would then produce both high-energy and GeV neutrino in time correlation. The classes of astrophysical transients already proposed as GeV neutrino sources such as collapsars serve to motivate the assumed emission time scale. In this poster, we show the statistical method and sensitivity of this search as well as the data quality checks to be performed.

Poster prize

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