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Searching for neutrino decoherence from quantum gravitational space-time fluctuations with IceCube.

Neutrino decoherence can result from coupling between neutrinos and their environment, including quantum gravitational fluctuations in the structure of space-time, producing characteristic damping signatures in neutrino probability over large distances. Here we present a study of the phenomenology of neutrino decoherence in atmospheric and astrophysical neutrinos resulting from heuristic space-time fluctuation cases, namely light cone fluctuations and neutrino-virtual black hole interactions, and a search for the resulting signals using the IceCube Neutrino Observatory.

Mini-abstract

Neutrino decoherence from quantum gravity with IceCube.

Experiment/Collaboration

IceCube

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