

Probing invisible neutrino decay using oscillations of atmospheric neutrinos at IceCube DeepCore

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The IceCube Neutrino Observatory consists of one cubic kilometer of Antarctic ice at the South Pole, which is instrumented with optical modules to detect Cherenkov light produced during neutrino interactions. The central lower region of the detector, known as DeepCore, has closely spaced optical modules that allow it to detect neutrinos with energies as low as a few GeV. We use the GeV-energy atmospheric neutrinos detected by IceCube DeepCore to search for neutrino decay, a phenomenon which is allowed in many grand unified theories beyond the Standard Model. While the decays of ν_1 and ν_2 are strongly constrained by supernova and solar neutrino data, atmospheric neutrinos offer an opportunity to search for the decay of ν_3 using wide ranges of energies and baselines. In this contribution, we present a search for invisible decay modes of ν_3 using a three-flavor neutrino oscillation framework in the presence of Earth matter effects.

Poster prize

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Classifica Sessioni: Poster session and reception 2

Classificazione della track: Beyond Standard Model searches in the neutrino sector