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Testing the (3+2) sterile neutrino scenario using the IceCube experiment.

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This analysis studies the IceCube's ability to test, phenomenologically, the presence of sterile neutrinos states in the context of the 3+2 model. As the neutrino mass splitting $\Delta m^2 \sim 1 eV^2$ can distort the angular and energy distributions of reconstructed muon events at the scale of a few TeV, where IceCube detection is highly optimized, it is a great opportunity to test sterile neutrino scenarios. Some considerations are established, based on previous analyses, in order to get conservative and robust limits, and also to reduce the number of parameters that must be tested, any other way, due to the total number of parameters, testing all of them could be computationally demanding. To obtain limits on the (3+2) sterile neutrino parameter space, a χ^2 function was used to compare a one-year sample of reconstructed muon events collected by IceCube and the expected number of events.

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