

New Limits on Sterile Neutrino Mixing with Atmospheric Neutrinos

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We present new limits on mixing between active and sterile neutrinos using more than 11 years of atmospheric data from the Super Kamiokande experiment. SuperK observes neutrinos over a wide range of energies and path lengths, allowing us to search for sterile neutrino signatures that are independent of theoretical ambiguities such as the precise new mass splitting or the number of sterile neutrinos. We place limits on the mixing between a new sterile mass state and the muon and tau flavor states. The muon-sterile mixing, in this context, is analogous to searches for muon neutrino disappearance at short baselines while the tau-sterile mixing can only be observed at long baselines.

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