

Abstract Submitted
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Search Capability for $\eta \rightarrow \nu_{e,\tau}\bar{\nu}_{e,\tau}$ Decays in Cubic Kilometer Neutrino Detectors ALI FAZELY, RATHNAYAKA GUNASINGHA¹, RICHARD IM-LAY, SAMVEL TER-ANTONYAN, XIANWU XU, Southern University — We investigate the discovery potential of cubic kilometer neutrino observatories such as IceCube to set stringent limits on the forbidden decays $\eta \rightarrow \nu_e\bar{\nu}_e$ and $\eta \rightarrow \nu_\tau\bar{\nu}_\tau$. The signatures for these decays are cascade events resulting from the charged-current reactions of $\nu_e, \nu_\tau, \bar{\nu}_e$ and $\bar{\nu}_\tau$ on nuclei in such detectors. Background cascade events are mainly due to ν_e 's from atmospheric μ, K^+ , and K_S^0 decays and to a lesser extent from atmospheric ν_μ neutral current interactions with nuclei. A direct upper limit for the branching ratio $\eta \rightarrow \nu_{e,\tau}\bar{\nu}_{e,\tau}$ of 5.0×10^{-4} at 90% CL can be achieved.

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