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Study of Atmospheric Neutrinos at JUNO

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The Jiangmen Underground Neutrino Observatory (JUNO) is a multi-purpose neutrino experiment located in Guangdong Province, China, featuring a 20-kton liquid scintillator (LS) detector. Its excellent energy resolution, large detector volume, and exceptional background control provide a unique opportunity to explore key topics in neutrino and astroparticle physics. JUNO's primary objectives are to determine the neutrino mass ordering (NMO) and precisely measure related neutrino oscillation parameters. The experiment is nearing the completion of its LS filling phase.

Atmospheric neutrinos are sensitive to NMO through matter effects and can enhance JUNO's overall sensitivity when combined with reactor neutrino analyses. The collaboration has employed leading models of neutrino flux, Earth structure, and neutrino interactions to predict the event rate in the detector. This poster presents a study of atmospheric neutrinos at JUNO, in particular the event rate prediction and its systematics.

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