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Neutrino mass hierarchy determination with PINGU

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This work is being performed in collaboration with E. Lisi (INFN, Bari, Italy) and F. Capozzi (U. of Bari, Italy). The proposed PINGU experiment (Precision IceCube Next Generation Upgrade) will study low energy atmospheric neutrinos and it will allow to probe the neutrino mass hierarchy, after 3-5 years of data taking. It will also be sensitive to the θ_{23} octant and it will help to resolve some degeneracies between neutrino oscillation parameters. We study the robustness of PINGU predictions with respect to a large variety of systematic uncertainties, including energy and angle resolution systematic errors and spectrum shape uncertainties, and we quantitatively determine the impact of such uncertainties on the hierarchy discrimination.

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