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TAMBO: Hunting Astrophysical tau neutrinos in the Andes

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IceCube's discovery of astrophysical neutrinos, and subsequent characterization of their energy spectrum up to a few PeV, has provided a new window to the high-energy Universe. A series of next-generation experiments aim to discover neutrinos with ultra-high energies, optimizing their sensitivity in the EeV range. However, many opportunities for discovery still remain in the study of the observed astrophysical flux. In particular, only a handful of astrophysical neutrinos have been detected above 1PeV in energy, and flavor measurements remain challenging due to the difficulty of differentiating tau events from other flavors. TAMBO (Tau Air-Shower Mountain-Based Observatory) is a proposed water-Cherenkov detector set on a cliff-edge in the high Peruvian Andes. Utilizing the unique geometry of the Colca valley, TAMBO is situated to produce a high-purity sample of 1–100 PeV astrophysical tau neutrino events, providing a novel aperture into the under-explored component of the existing high-energy neutrino spectrum.

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