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Low-energy tau searches with IceCube

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Charged-current tau neutrino signatures in IceCube have unique topologies at high energies primarily due to the decay of the tau neutrino into lower energy particles. Low energy tau particles produced in the GeV range will decay immediately, producing a shower topology similar to both neutral-current and electron neutrino interactions in IceCube. The spectrum of the parent tau neutrinos can yield information about the PMNS neutrino mixing matrix, giving a novel test of unitarity.

In this presentation, I'll be discussing the methods of identifying these low-energy showers and the impact of the proposed PINGU upgrade to IceCube on the tau neutrino appearance results.

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