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Search for Solar Atmospheric Neutrinos with 9 Years of IceCube Data

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Cosmic-rays interacting with nucleons in the solar atmosphere create pions, kaons, and other particles which produce a flux of high-energy neutrinos. Predictions for this flux exist in the literature, but it has yet to be measured by neutrino observatories. Since this flux is an irreducible background for solar WIMP searches currently being carried out by neutrino telescopes, its magnitude sets a sensitivity floor for these searches. Furthermore, the detection of these neutrinos would allow neutrino telescopes to measure neutrinos in yet-unprobed oscillation regimes, characterized by a ratio of baseline to the energy of $L/E \sim 150 \text{e6km}/1 \text{TeV} \sim 1 \text{e5km}/\text{GeV}$. In this contribution, we will present the status of a new IceCube event selection optimized to detect these neutrinos.

Collaboration name

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