



ID contributo: 221

Tipo: Parallel Flash talk

Search for Solar Atmospheric Neutrinos with 9 Years of IceCube Data

giovedì 25 febbraio 2021 11:45 (5 minuti)

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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Classifica Sessioni: Astrophysical Models

Classificazione della track: Neutrino Telescopes and Multimessenger