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Atmospheric Neutrino and Dark Matter Detection with Paleo-detectors at the University of Michigan

Wednesday 21 May 2025 10:30 (45 minutes)

The use of ancient minerals as paleo-detectors is an emerging experimental technique capable of transforming the fields of neutrino and dark matter detection. We present the concept of using paleo-detectors to indirectly detect atmospheric neutrinos and dark matter particles (weakly interacting massive particles and beyond) by observing nuclear recoil damage tracks induced by interactions with atomic nuclei. Progress on the use of paleo-detectors for neutrino and dark matter detection at the University of Michigan will be presented. Ongoing research includes target mineral optimization through preliminary imaging, cosmogenic neutron background modeling, and molecular dynamics simulations. Additionally, we anticipate presenting results on irradiation experiments using natural and synthetic paleo-detector minerals to study the formation of damage production in pristine lattices compared to natural lattices.

Do you plan to give the talk in person?

Yes

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