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Probing Kaon-Decay-at-Rest (KDAR) in the Sun with the Deep Underground Neutrino Experiment (DUNE) OLEXIY DVORNIKOV, University of Hawaii, DUNE COLLABORATION — The observation of 236 MeV muon neutrinos from kaon-decay-at-rest (KDAR) originating in the core of the Sun would provide a unique signature of dark matter annihilation. Since excellent angle and energy reconstruction are necessary to detect this monoenergetic, directional neutrino flux, DUNE with its vast volume and reconstruction capabilities, is a promising candidate for a KDAR neutrino search. In this talk, we will present a preliminary study in which we evaluate the proposed KDAR neutrino search strategies by realistically modeling both neutrino-nucleus interactions and the response of DUNE. Although reconstruction of the neutrino energy and direction is difficult with current techniques in the relevant energy range, the superb energy resolution, angular resolution, and particle identification offered by DUNE can still permit great signal/background discrimination. Moreover, there are non-standard scenarios in which searches at DUNE for KDAR in the Sun can probe dark matter interactions.

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