Abstract Submitted
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(CEU) Feasibility of Proton Loading in Liquid Argon Based Scintillators[1] ZACHARY HAINSEL, North Carolina State University, Oak Ridge National Laboratory, MICHAEL FEBBRARO, Oak Ridge National Laboratory, CHRISTINE AIDALA, University of Michigan, BRENNAN HACKETT, University of Tennessee at Knoxville, STEVEN PAIN, Oak Ridge National Laboratory, REX TAYLOE, JACOB ZETTLEMOYER, University of Indiana, ALFREDO GALINDO-URIBARRI, Oak Ridge National Laboratory — Liquid argon has proven to be an ideal detection medium for a broad range of nuclear and particle physics experiments. It has the capability to generate both scintillation and charge signals to readout simultaneously. This enables the readout of not only the energy deposition but also the spatial information of interactions. It would be beneficial if hydrogen could be introduced into the LAr medium. This additional proton target could potentially improve sensitivity for neutron detection, limit the number of final state interactions for neutrino physics, and improve background neutron vetoing capability for neutrinoless double-beta decay and other low-energy physics searches. Historically, the introduction of hydrogen into LAr as a hydrocarbon has failed due to the absorption of LAr scintillation by the introduced dopants. A promising novel detection scheme based on using the radiationless transfer of excitation energy is being investigated in a 10% methane loaded liquid argon detector. The apparatus and experiment status will be presented.

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