

Lightweight Dark Matter search in a neutrino beam with the NOvA Near Detector

Friday 6 July 2018 20:15 (15 minutes)

Beyond the Standard Model ideas include lightweight (sub-GeV) Dark Matter candidates. We postulate that they could be produced within the NuMI beam at Fermilab. The NOvA neutrino experiment has recorded $\sim 10^{20}$ protons on target, which correspond to millions of neutrino interaction events in its low-Z, 300-ton, off-axis Near Detector. Among these neutrinos, we search, in a model agnostic way, for EM showers signatures from DM candidates scattering or decaying within the detector. We present here the techniques we use to process these events, involving sophisticated particle ID algorithms. We also discuss the progress in understanding the NOvA sensitivity to them as well as projections for the capabilities and sensitivity of the DUNE Near Detector to these models.

Author: Mr JEDINY, Filip (Czech Technical University in Prague)

Presenter: Mr JEDINY, Filip (Czech Technical University in Prague)

Session Classification: POSTER

Track Classification: Beyond the Standard Model