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Hidden Sector Searches at the NOvA Near Detector ATHANASIOS HATZIKOUTELIS, University of Tennessee, Knoxville — We search for Axions, Dark Matter candidates and Hidden Sector particles from New Physics, possibly produced in the NuMI fixed-target complex. The main signatures of such particles interacting in the NOvA Near Detector may be either single showers from scattering interactions or di-lepton tracks from the particle decays within the detector. The upgraded neutrino source, delivering nearly 1E15 POT per sec, surpasses the most stringent dark matter production upper limits of current models in the under-10GeV mass range. We take advantage of the sophisticated electron shower identification algorithms of NOvA to interrogate the data from the first production runs with the near detector. Initially, we search for interactions on atomic electrons at large energy transfer. We focus on indications of any excess events above the predicted neutrino neutral-current rates at these ranges. These studies will influence the development of further data analysis channels and the designs of the next generations of neutrino near detectors as well as dedicated detectors for hidden sector searches worldwide.

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