THE SEARCH FOR HIGHLY IONIZING, MASSIVE PARTICLES AT THE NOvA FAR DETECTOR. Dayne R. Coveyou, Department of Physics, University of Virginia. The NOνA Experiment is a long-baseline neutrino oscillation experiment with two primary finely grained, segmented, liquid scintillator detectors: a Near Detector at Fermilab and a Far Detector in Ash River, Minnesota. The Far Detector is at the surface with very little overburden and nearly continuous livetime since 2014, combined with its enormous surface area of 4200m2. These characteristics enable precise tracking and characterizing of ionizing particles from cosmic rays. Ambitiously, we search to find evidence of intermediate- to high-mass, stable, highly ionizing particles of 106-1018 GeV in these cosmic rays. This eclipses previous searches such as MACRO and SLIM. This search implements a unique Data Driven live trigger and offline cuts to bring the already low background to zero. These triggers and cuts were verified using Geant4 simulations. Author contact: drc2p@virginia.edu