Development of Techniques for a Dark Matter Search at the NOvA Far Detector ROBERT MINA, Univ of Virginia, NOVA COLLABORATION — A summary of efforts related to a Dark Matter search using upward going muons at the NOvA Far Detector in Ash River, MN is presented. WIMP annihilations conjectured to occur within the Sun are assumed and corresponding signal MC generation techniques developed for use within the NOvA framework. The properties of the annihilation-produced neutrino signal were studied for simulated WIMPs of various masses and with different annihilation channels. An improved algorithm for extracting timing information from the data was integrated within the Data Driven Trigger, and its performance studied. Special concern was given to trigger on low-energy (less than 20 GeV) muons so as to compete within this regime with similar searches at other neutrino detectors. This study aims to use the neutrino detector as a neutrino telescope by isolating muon events that likely correspond to "interesting" astrophysical events and/or physics beyond the standard model.

Robert Mina
Univ of Virginia

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