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Identification of Upward-going Muons for Dark Matter Searches at the NOvA Experiment LITING XIAO, University of Virginia and Fermilab, NOVA COLLABORATION — We search for energetic neutrinos that could originate from dark matter particles annihilating in the core of the Sun using the newly built NOvA Far Detector at Fermilab. Only upward-going muons produced via charged-current interactions are selected as signal in order to eliminate backgrounds from cosmic ray muons, which dominate the downward-going flux. We investigate several algorithms so as to develop an effective way of reconstructing the directionality of cosmic tracks at the trigger level. These studies are a crucial part of understanding how NOvA may compete with other experiments that are performing similar searches. In order to be competitive, NOvA must be capable of rejecting backgrounds from downward-going cosmic rays with very high efficiency while accepting most upward-going muons.

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