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Impact of Spectral Photon Sorting on Future Neutrino Experiments BENJAMIN LAND, TANNER KAPTANOGLU, MENG LUO, AMANDA BACON, JOSHUA KLEIN, University of Pennsylvania — Identifying Cherenkov photons produced when charged particles interact with scintillators provides additional information about the interaction, including directionality and particle identification, while maintaining the excellent energy and position resolution typical of scintillators. Dichroicons achieve this with a Winston cone made from dichroic filters, which reflects photons inconsistent with typical scintillation spectra to one photodetector, and passes other photons to a different photodetector. The additional information provided by Cherenkov photons detected with Dichroicons can be used to reduce backgrounds for many neutrino measurements, including low energy solar neutrinos and neutrinoless double beta decay. Here we discuss simulation studies demonstrating spectral photon sorting with Dichroicons in large liquid scintillator detectors.

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