

Abstract Submitted  
for the APR21 Meeting of  
The American Physical Society

**Exploring Spectral Photon Sorting in Large Neutrino Detectors**

BENJAMIN LAND, SAMUEL YOUNG, MENG LUO, AMANDA BACON, University of Pennsylvania, TANNER KAPTANOGLU, University of California, Berkeley, 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 scintillator detectors. Dichroicons achieve this by spectrally sorting photons with a Winston cone made from dichroic filters, which reflects photons inconsistent with typical scintillation spectra to one PMT, and passes other photons to another PMT. A simulation model of dichroicon prototypes has been implemented in the GPU-enabled photon Monte Carlo package Chroma. This model is used to evaluate the background rejection, particle identification, and direction reconstruction performance of a large liquid scintillator detector instrumented with dichroicons.

Benjamin Land  
University of Pennsylvania

Date submitted: 07 Jan 2021

Electronic form version 1.4