



Canadian Association
of Physicists

Association canadienne
des physiciens et physiciennes

Contribution ID: 151 Type: **Poster Competition (Graduate Student) / Compétition affiches (Étudiant(e) 2e ou 3e cycle)**

(G*) POS-J97 – Optical reflectors in an ARICH detector for a hadron production experiment

Wednesday 9 June 2021 14:19 (2 minutes)

EMPHATIC (Experiment to Measure the Production of Hadrons At a Testbeam In Chicagoland) is a low-cost, table-top-sized, hadron-production experiment located at the Fermilab Test Beam Facility (FTBF) that will measure hadron scattering and production cross sections that are relevant for neutrino flux predictions. High statistics data will be collected using a minimum bias trigger, enabling measurements of both interacting and non-interacting cross sections. Particle identification will be done using a compact aerogel+heavy gas hybrid ring imaging Cherenkov (RICH) detector, a time-of-flight (ToF) wall, and a lead glass calorimeter array. The ARICH focuses on the kaons, pions and protons separation with multi-track capability up to 8 GeV/c. This presentation is about the implementation of optical reflectors in the ARICH system to reflect Cherenkov light outside of the PMT array acceptance onto the PMT array increasing the angular acceptance of the experiment with a low cost improvement.

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Session Classification: W-POS-J #80-107 Poster session (PPD) / Session d'affiches (PPD)

Track Classification: Particle Physics / Physique des particules (PPD)