Contribution ID: **10** Type: **Poster**

High-Rate Picosecond Photodetectors (HRPPDs) for Particle Identification Subsystems

Wednesday 8 October 2025 20:00 (20 minutes)

High-Rate Picosecond Photodetectors (HRPPDs) are micro-channel plate (MCP)-based, DC-coupled photosensors recently developed by Incom, Inc. These sensors offer an active area of 104 mm × 104 mm, a pixel pitch of 3.25 mm, peak quantum efficiency exceeding 30%, low dark count rates, and a timing resolution of approximately 20 ps for single-photon detection. These features make HRPPDs highly suitable for use in Ring Imaging Cherenkov (RICH) detectors with high-precision timing capabilities, and they are being considered as upgrade options for the LHCb and Belle II experiments.
A set of newly produced HRPPDs has recently been characterized at Brookhaven National Lab, Jefferson Lab as well as INFN Trieste and Genova. In addition to a systematic evaluation of their key properties such as timing resolution, gain and quantum efficiency uniformities, this talk reports, for the first time, measurements of the absolute photon detection efficiency of these photosensors. Preliminary results on HRPPDs' resilience to magnetic fields up to 2 T and degradation due to aging effects caused by excessive light exposure will also be discussed.

Author: JIN, Yifan (Brookhaven National Laboratory (US))

Presenter: JIN, Yifan (Brookhaven National Laboratory (US))

Session Classification: Poster

Track Classification: RDC 2 Photodectors