Discussion of ProtoDUNE Photon-Detector Status and Plans

- Initial data analysis demonstrates expected photon-detector performance
  - Already demonstrated triggering on Beam Events and on Cosmic muons
  - Successful demonstration of UV-light calibration system
  - Channel gain calibration (ADC -> PE) done and/or in progress with calibration data
  - "t0" analysis is starting (PDS ⇔ CTB, CRT, TPC)
  - Light yield linearity vs charged particle beam energy

- Next steps with ProtoDUNE PDS (needed as input to TDR)
  - Data to MC comparison
  - Measure detection efficiency of three deployed light collection technologies
  - Verify "t0" capability
  - Explore possibility of pulse-shape discrimination through ratio of prompt to delayed light for different particle species
  - "MicroBooNE anomaly" (anomalous SPE rate)

- Example of a longer term analysis topics
  - Use PDS capabilities in the beam data analysis (t0, energy, pid)
  - Explore Michel electron detection with combined PDS and TPC systems
  - Use PDS information to reject cosmic background in test-beam data reconstruction
  - Monitor PDS stability over time