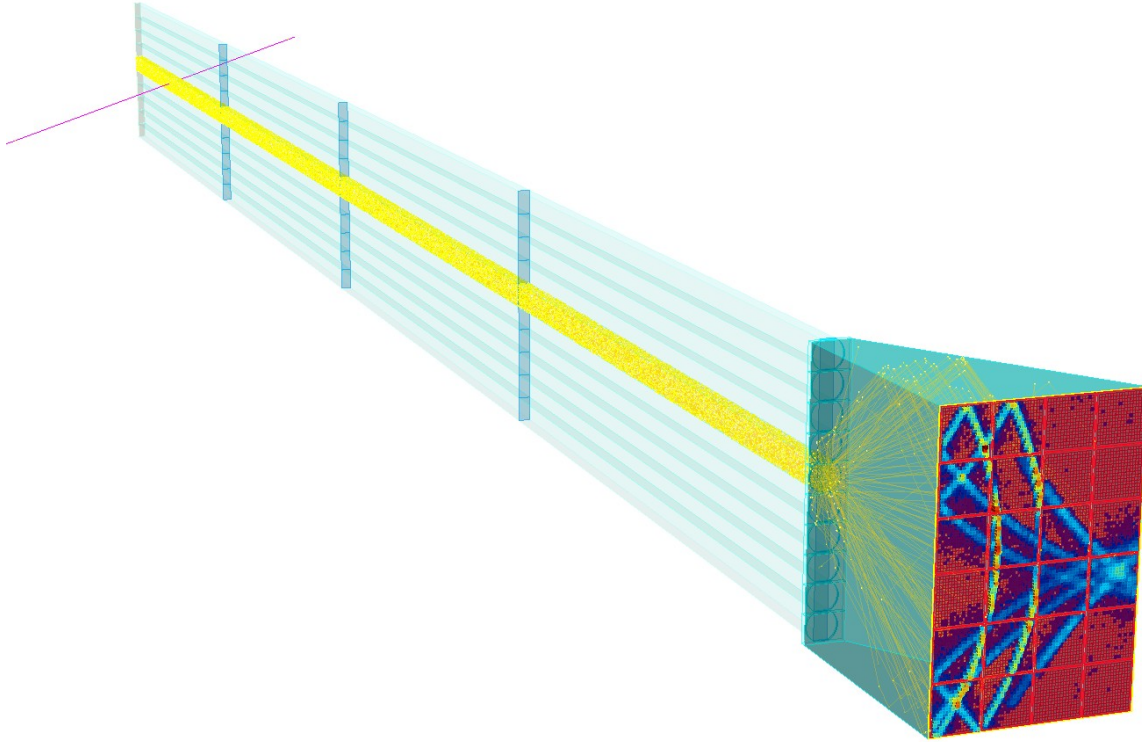


Simulation Activities for hpDIRC



hpDIRC DSSC Meeting
07 Feb 2025

Roman Dzhygadlo



Frameworks

ePIC sim/reco stack

- all optical components of the geometry are implemented
- wave-length dependent material properties
- quantum and collection efficiencies of PMTs
- digitization
- reconstruction
 - Geometrical
 - Time imaging
- realistic PID LUT is provided for a fast sim / reco

maintainer: [Bill Llope](#)

Standalone Geant4

- more flexible, full featured
- tuned to the test beam data of prototype tests
- using realistic angular resolution
- for testing alternative / cost saving design options, corrections, and reconstructions

maintainer: [Roman Dzhygadlo](#)

Activities

- alternative designs for the expansion volume (Roman Dzhygadlo)
- chromatic correction
- per-PMT Cherenkov angle correction
- Cherenkov ring fit (corrects the direction of the charged track)
- Deep RICH ML implementation for hpDIRC (Cristiano Fanelli, James Giroux)
- alignment calibration (Afaf A. Wasly)
- layout optimization of PMTs (Md. Imran Hossain)
- simulation / reconstruction with high amount of dark noise from SiPM
- risk management study of optimal bar width in the case BaBar bars are not usable
- simulation for Cosmic Ray Telescope (Carlos Ayerbe Gayoso and others)