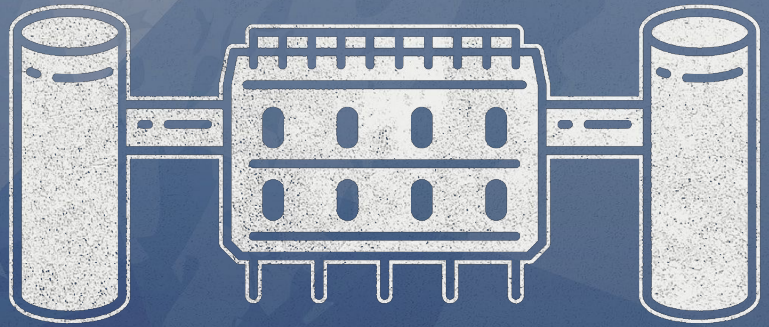
Welcome to the
2021 Photon Propagator Workshop



Organisational info

- The agenda in available at: https://events.icecube.wisc.edu/event/145/timetable

- Please upload slides to Indico
- Zoom link: https://wipac-science.zoom.us/j/94046114090

- Slides & Zoom recordings will also be collected in the Calibration Group gDrive

Scope & goals for Monday

- PPC and clSim have significantly diverged
  - with PPC supporting the newest ice models
  - clSim offers a number of features relevant to support simulation production

- This is hurting physics! Some examples listed by delay:
  - Cable shadow: DOM orientations available since 2018!!
  - Hole ice: SpiceHD available since 2017. Updated after BFRv1.
    - Cable and hole ice implementations exist in clSim, but are untested
  - BFRv2: New default ice model (requiring small clSim changes) since March.
  - New tilt: Generic implementation available since August. Models still work in progress, but will be relevant in particular for IceCube (Gen2) footprint)

Scope & goals for Monday

- Define scope of software packages and required features
  - Merging into single piece of software did not find support
  - Is PPC used in physics simulation, does it need to support Geant/Snowstorm…?
  - Are LED simulations / ice fitting done in clSim?

- Identify maintainers and reviewing procedures
  - For each feature to be ported the implementing software presents the rational, implementation at the software call. The adapting software presents their adaptation a few weeks later, after mutual code review.
  - Minutes and summary of today's discussion to be presented at software call

Scope & goals for Tuesday

- The heterogeneous instrumentation of the IceCube Upgrade poses significant challenges (intersection code handling OM geometry & PMT identification)
  - Segmented photocathodes
  - Elongated modules
  - Wavelength sampling from DOM to WOM
  - Speciality photon propagation e.g. for cameras
- Vastly different approaches currently being pursued:
  - Simulation to a common oversized sphere and acceptance tables (current default)
  - Detailed OM simulation from oversized sphere to PMTs (e.g. in Geant)
  - Approximative implementation of OM geometries based on effective areas in PPC
  - CAD based OM intersection with OptiX
- Present and discuss on different approaches (and their limitations), less formal than Monday...

Coffee Break