

# Monte Carlo simulation of DIRC prototype

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# Status of program

- Geometry of DIRC (main and important parts)
- Refractive indexes (Quartz, KamLand Oil)
- Reflectivity of mirror
- Quantum efficiency of PMTs – not work yet
- Hits in PMTs

# Outputs of program

- Root histograms (online, offline)
- Visualization of DIRC, tracks of photons, hits (3D-model)
- OpenGL – online visualization
- JAS – offline visualization with a possibility of rotation

# Online visualisation and histogramming



DircAnalysisPhotonCanvas

File Edit View Options Inspect Classes Help

**Energy of photon**

hEnergy
Entries 197
Mean 2.988
RMS 0.6625

**Time**

hTime
Entries 197
Mean 24.54
RMS 22.68

**Number of hit per particle**

hNumberOfPhotonHit
Entries 1
Mean 0
RMS 0

**Wavelength of photon**

hWaveLength
Entries 197
Mean 437.1
RMS 101.9

viewer-0 (OpenGLImmediateX)

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Index : 3      used in the geometry : Yes      recalculation needed : No
Material : Aluminum
Range cuts   : gamma 0 fm      e- 0 fm      e+ 0 fm
Energy thresholds : gamma 990 eV      e- 990 eV      e+ 990 eV
Region(s) which use this couple :
DefaultRegionForTheWorld

-----
Start Run processing.

--> Begin of event: 0
Number of optical photons produces in this event : 779
>>> Summary of Hits in Event: 0

Tracker hits -----
197 hits are stored in DirTrackerHitsCollection.
--> End of event: 0
Run terminated.
Run Summary
Number of events processed : 1
User=13.64s Real=17.37s Sys=0.02s
Time: User=13.79s Real=18.53s Sys=0.03s
Idle>

```

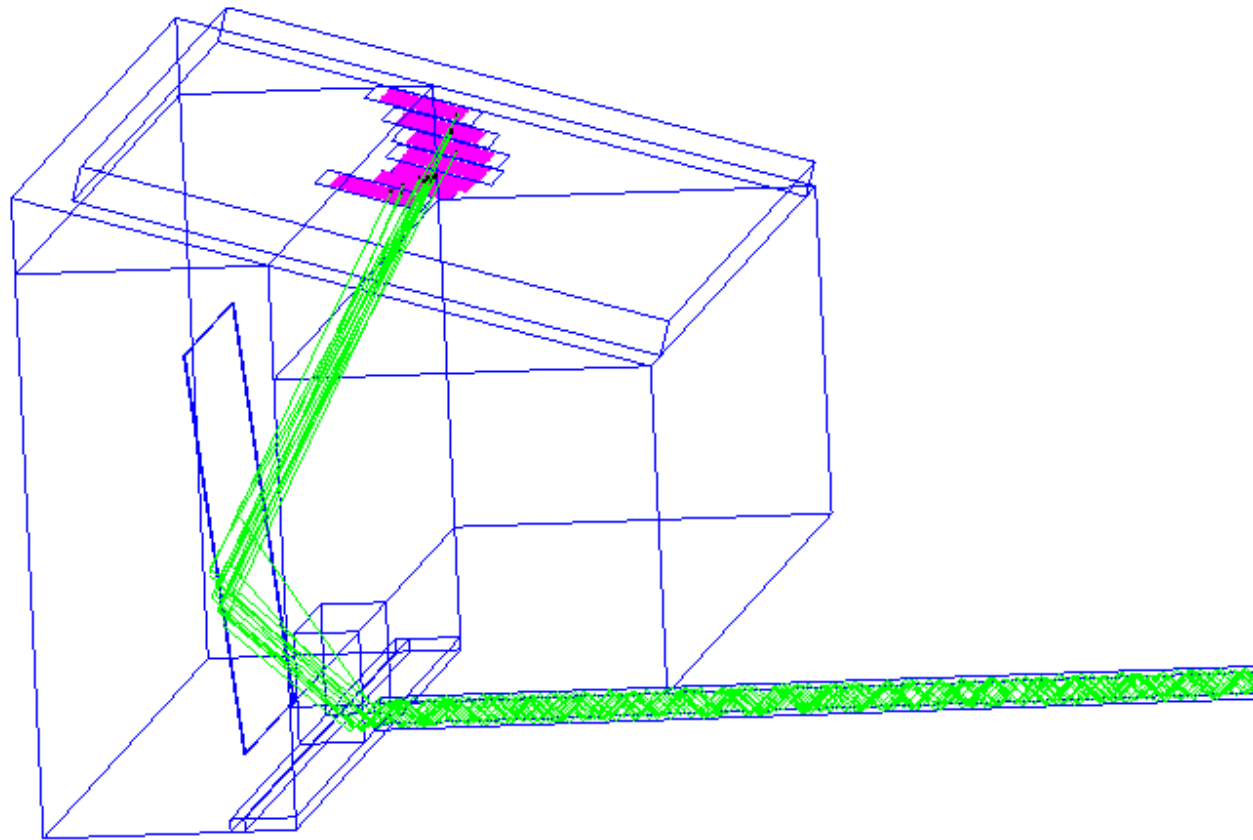
ModelSim XE II 5.7c

Mozilla Firefox

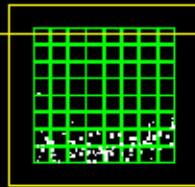
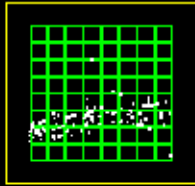
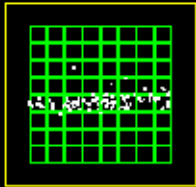
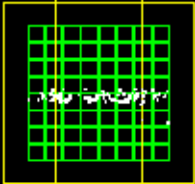
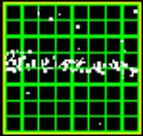
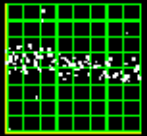
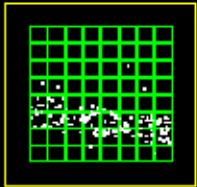
Outlook 2003

Start Microsoft PowerPoint - [...] slovník.cz - Multilingual Di... kaon.slac.stanford.edu - ... viewer-0 (OpenGLImmed... DirAnalysisPhotonCanvas untitled - Paint 1:56 PM

# Offline visualisation and histogramming



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# Next steps

- Quantum efficiency of PMTs
- Adding Epotek between bars
- Hit visualization using root