Subject: Re: Barrel DIRC in Geant 4 - Cherenkov photon propagation
Posted by Jochen Schwiening on Wed, 15 Sep 2010 11:49:30 GMT
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Just a quick update: the photon propagation issues seems to be solved.
The photons were actually stopped by our own DIRC code PndDrc.cxx where we stop photons that leave the bar volume in a location other than the bar end. This was done to avoid tracking Cherenkov photons that left the bar because they were not internally reflected but then keep getting scattered around PANDA and use up tons of CPU time.
This cut worked well in Geant 3 but in Geant 4 there seems to be a volume change step even during internal reflections (seems wrong but at least that what it looks like), which caused all photons to be stopped by our PndDrc code.
After I removed this explicit stop command I get photons propagating down the bar and registering on the detector pixels, as can be seen in the attached snapshot. Looks fine to me.
(The photons seen leaving the bar close to where the track hits the DIRC - those are the ones we wanted to stop. Keeping them increases the time per event by a factor of 5...)

By adding additional entries for short and long wavelengths into the media_pnd.geo for DIRCairNoSens I was able to make most of the annoying warning message go away.

I'll follow up on the photon gun issue in G4 in Maria's thread.

Cheers, Jochen

File Attachments

1) dirc_geant4_prop_ok.png, downloaded 3095 times