Subject: NIEL
Posted by Sergey Kononov on Wed, 11 Apr 2018 04:31:00 GMT
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Hi!
How to extract NIEL (non-ionizing energy losses) in PandaRoot? I know it is possible in Geant4.
Best regards,
Sergey

Subject: Re: NIEL
Posted by Ralf Kliemt on Thu, 12 Apr 2018 11:29:44 GMT
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Dear Sergey,

We have access to the Virtual Monte-Carlo (VMC) wrapper during simulation. The class documentaion is ROOT's TVirtualMC: https://root.cern.ch/doc/master/classTVirtualMC.html
Via google I found a pdf stating simewhere that TVirtualMC cannot deliver NIEL and a direct access to Geant4 is needed.

Kind regards from GSI
Ralf

Subject: Re: NIEL
Posted by Mohammad Al-Turany on Thu, 12 Apr 2018 17:50:05 GMT
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Hi,

I forward this issue to Ivana (the main VMC author) and here is the answer:

Hi Mohammad,

It is not so straightforward.
Users can extend Geant4 VMC user action classes, eg TG4SteppingAction and access directly Geant4 classes (G4Step) which provide this information. However this mode is not in regular testing so getting this work may require some debugging.

The simplest way how to provide this information would be to add
a dedicated function for NIEL Edep in TVirtualMC interface;
the user would need to wait when this update (Root && VMC packages) is
available in tagged packages.

I have progressed with sensitive detectors, which will also require modifications in Root vmc core library, so this addition may be added with these changes. Let me know.

Please, pass my reply to your user, or to your forum, as you wish.

Cheers,

Ivana

Subject: Re: NIEL
Posted by Sergey Kononov on Fri, 13 Apr 2018 01:52:22 GMT
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Dear Mohammad,
Thank you very much for the answer and triggering a request to the VMC developer.
We'll wait when it will be available. We have some workaround for calculating 1 MeV neutron equvalent flux for particles but it would be good to cross-check with direct simulation.
Best regards,
Sergey

Subject: Re: NIEL
Posted by Tobias Stockmanns on Tue, 17 Apr 2018 14:55:17 GMT
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Dear Sergey,

sorry for my late reply.
In the MVD we use pre-stored lists which contain the conversion values to go from particle momentum and type to the corresponding neutron flux.

Have a look at detectors/mvd/MvdTools. In there are the stored lists /MvdRadDamage and the PndMvdRadDamTask which does the conversion.

I hope this helps.

Cheers,

Tobias

Subject: Re: NIEL
Posted by Sergey Kononov on Wed, 18 Apr 2018 07:27:37 GMT
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Dear Tobias,

Thank you for the usefull info. We'll look into the MVD software.

Cheers,
Sergey