

Low Energy Ion-ion physics: Interfaces, Model Organization and Requirements

Geant4 Collaboration Workshop
12 September 2012
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Gaps in Geant4 Ion-ion Models

- Hadronic elastic ion-ion scattering
 - no model at any energy
 - also no cross sections
- Low energy ion-ion inelastic
 - nothing below ~ 50 MeV/n
 - no cross sections here either?
- High energy ion-ion inelastic
 - no detailed models above ~ 10 GeV/n
 - interface to DMPJET 2.5 available
 - G4ElectroNuclearDissociation, Wilson abrasion/ablation

Requirements from Experiments

- Low energy ion-ion inelastic
 - nuclear physics expts.
 - single-event upset studies
- High energy ion-ion inelastic
 - cosmic ray backgrounds
 - single event upset studies

Extending Existing Models

- FTF, QGS may be able to handle high energy nucleus-nucleus
- QMD, too, but only with a lot of work

Physics Lists

- We do not have a physics list based on the best ion-ion models
 - currently Tatsumi generates them on a custom basis
- Such a list should include the DPMJET interface