

HAVING AN ABSTRACT CLASS FOR DIFFERENTIAL CROSS-SECTION

PARALLEL 5B

Laurent Desorgher & Marc Verderi

Lund Collaboration Meeting

August 2018

Motivations

1. DXTRAN biasing:
 - Biased particles –gammas, neutrons- are scattered toward a ROI
 - Analog diff-XS needed for the weight correction
2. Reverse MC:
 - The availability of all diff-XS able to produce a given secondary type would ease the implementation of the reverse process
3. Information on the physical process or model:
 - Having a diff-XS class would make easier to users to get cross-section tables of the related models.

Status

- Several discussions happened this year together with Laurent D.
- We want an abstract class that calculates:
proba. = diff-XS (initial state, final state)
- We limit ourselves to the case of PostStepDolt
- And we propose:
 - “initial state”:
 - Could be G4track* and G4Material*
 - General, even though G4Track maybe cumbersome for 3.
 - “final state”:
 - Final state can be complicated : many correlated particles + energy deposit
 - Limit to one secondary particle, and propose:
 - Energy and angular deviation of the primary (if still alive)
 - PDG, E, angular deviation wrt primary of the secondary (if any)
- This definition of diff-XS is enough to serve the use cases of previous page.