Exercise 6: Biasing

Advanced FLUKA Course

Definition of problem

Goal

Study the effect of electro-/photo-nuclear interactions in terms of neutron production for an electron beam on a thin and thick target

Instructions

- 1 GeV electron pencil beam
- 1% X_0 iron target (0.017 cm long, 0.5 cm radius)
- use PRECISION as defaults
- set EMFCUT to 5 MeV (why?)
- score plain double differential neutron yield from the target
  - USRYIELD with kinetic energy and polar angle
- activate photo-nuclear interactions in the target material with PHOTONUC
- in a separate run activate also electro-nuclear interactions (PHOTONUC with sdum: ELECTNUC)

- In case of failure think of a suitable biasing option
- Repeat for a thick target (X_o), and explain the outcome