A 3D schematic diagram of a neutron moderator assembly, likely for a nuclear reactor. The diagram shows a complex arrangement of cylindrical and rectangular components, possibly fuel elements and moderator rods, arranged in a grid-like pattern. The components are colored in shades of orange, brown, and grey. A central white box contains the title of the presentation. The background is a light blue gradient.

NEUTRON BACKGROUND RADIATION IN SOLID

Lorenzo Zana
Syracuse University
April 6 2012

- 1 Source term
 - NEUTRON FLUX through baffles holes

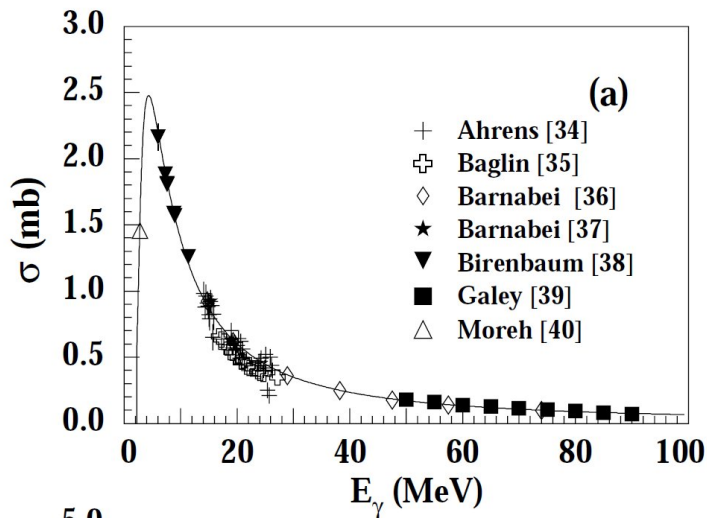
Source term

Problem with Deuterium and FLUKA

- In FLUKA for e^- all hadron production is then the result of real gammas produced in electromagnetic interactions interacting with target nuclei.
- Well known problem, implementation is underway from FLUKA developers
- Really important for Deuterium target.
- Good agreement for Neutron photoproduction on Deuterium.

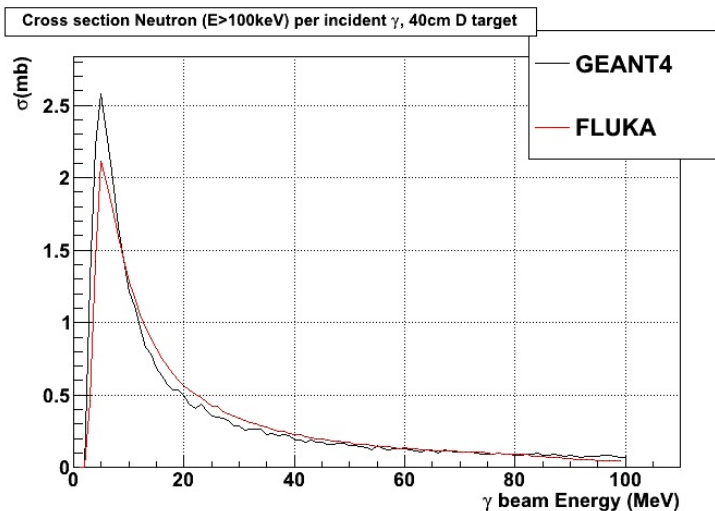
Source term

Measured cross section Neutron photoproduction on Deuterium



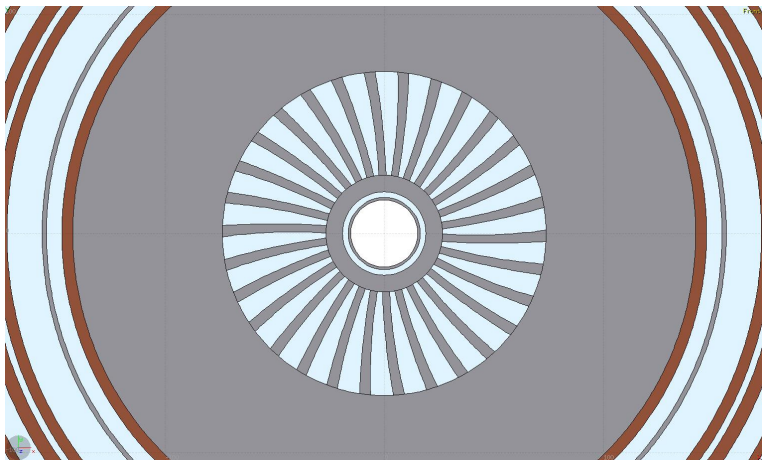
Source term

Neutron photoproduction on Deuterium GEANT4 vs FLUKA



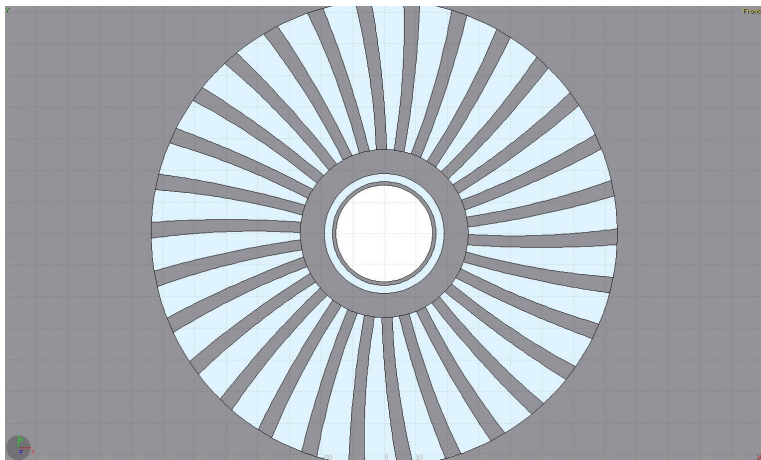
Baffle design

Baffle design



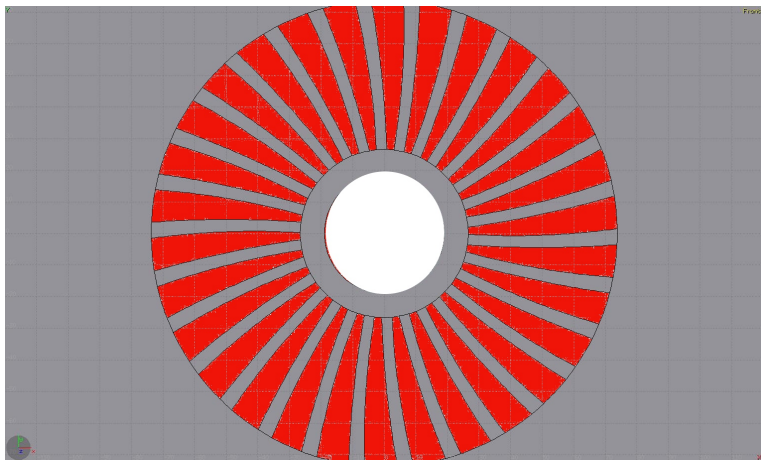
Baffle design

Baffle design



Baffle design

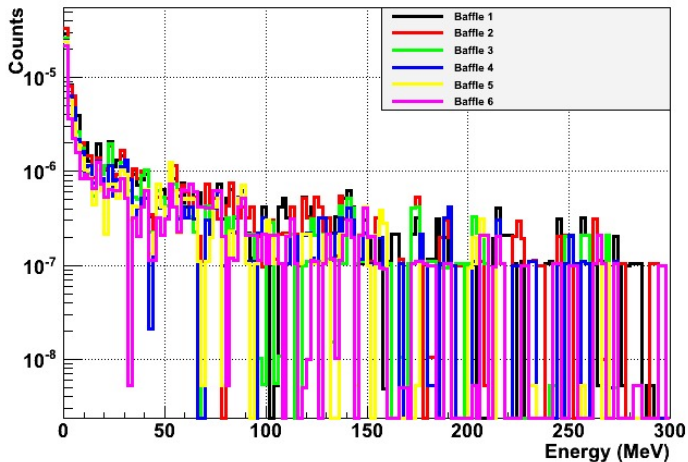
Baffle design flux through red area at different baffles



Baffle design

Neutron FLUX at different baffles holes

Neutron Spectron at each baffle opening (bin size=2MeV)



Baffle design

Neutron FLUX at different baffles holes

Neutron Spectron at each baffle opening (bin size=2MeV)

