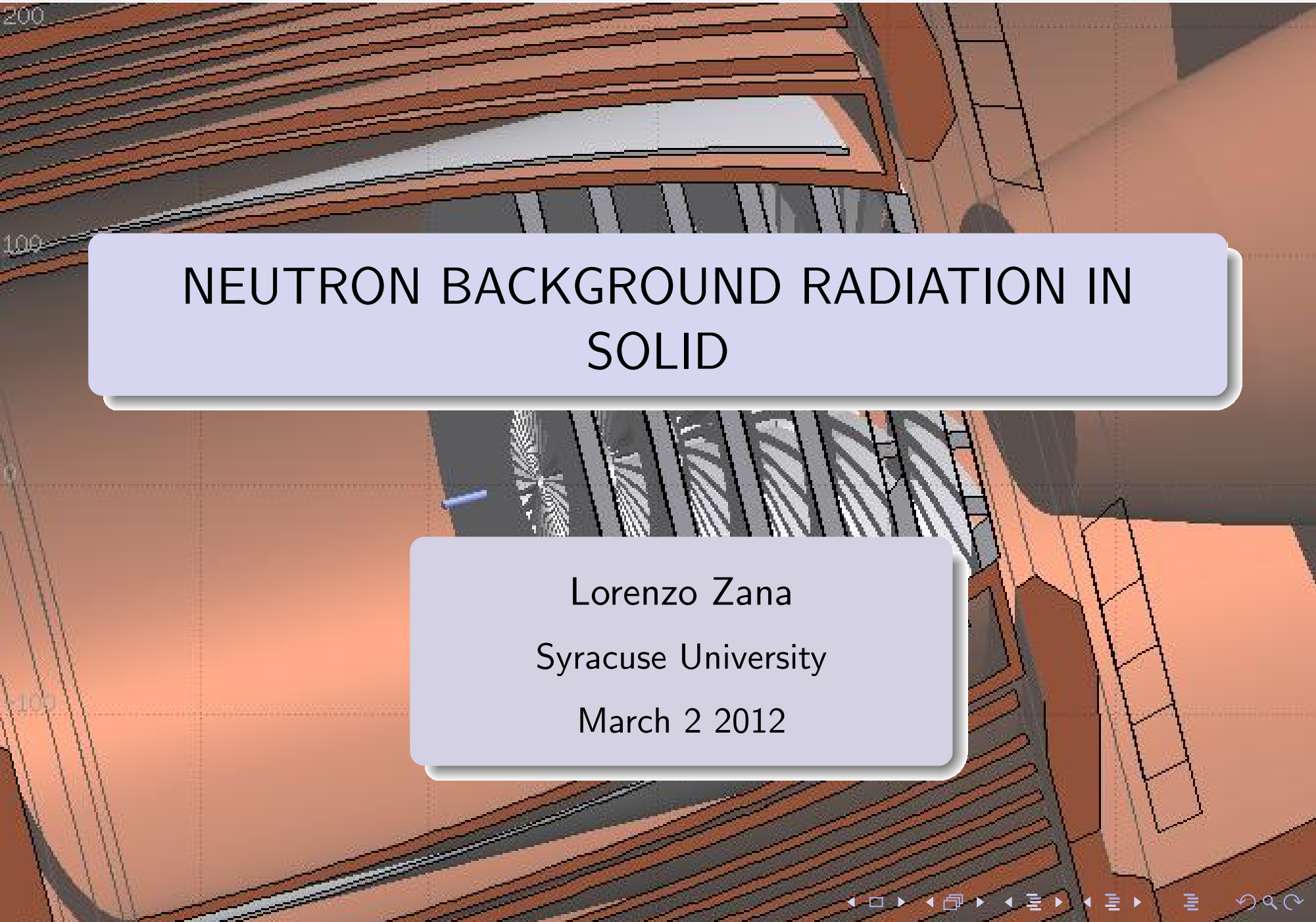

NEUTRON BACKGROUND RADIATION IN SOLID

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Situation

Different Simulation packages used for SoLID

- GEANT3 (comgeant)
- GEANT4 (gemc, solgemc, standalone single-purpose)
- FLUKA

Goal

Goal for background studies

- Replicate the results obtained with GEANT3 with the new simulations.
- Understand the reason for the differences.
- Have a benchmark with a different simulation for the results.

Done (update from previous Collaboration meeting)

- Updated GEANT4 and FLUKA to newer version
- Started to work with new system to investigate differences

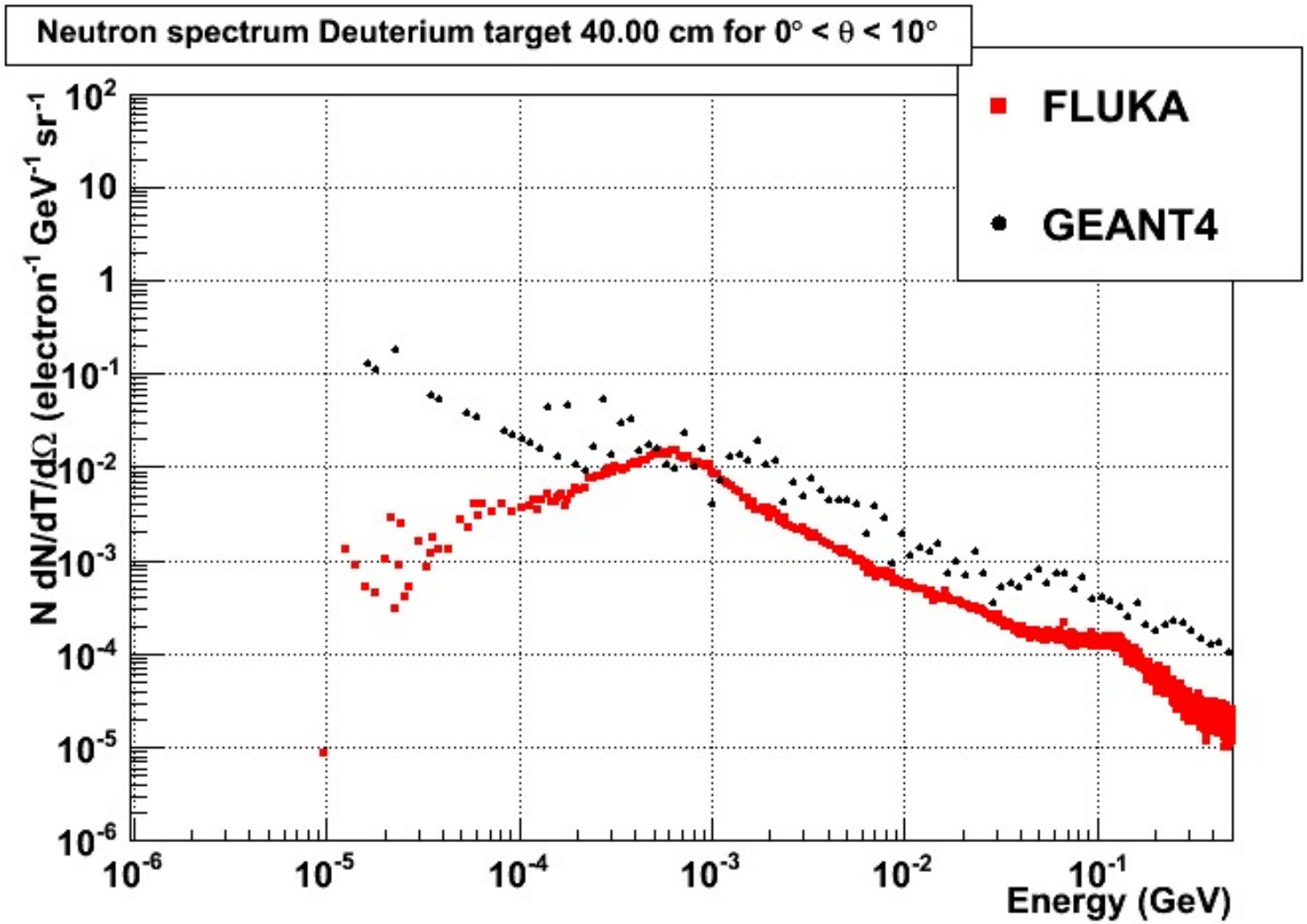
Source term

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 develpers
- Really important for Deuterium target.

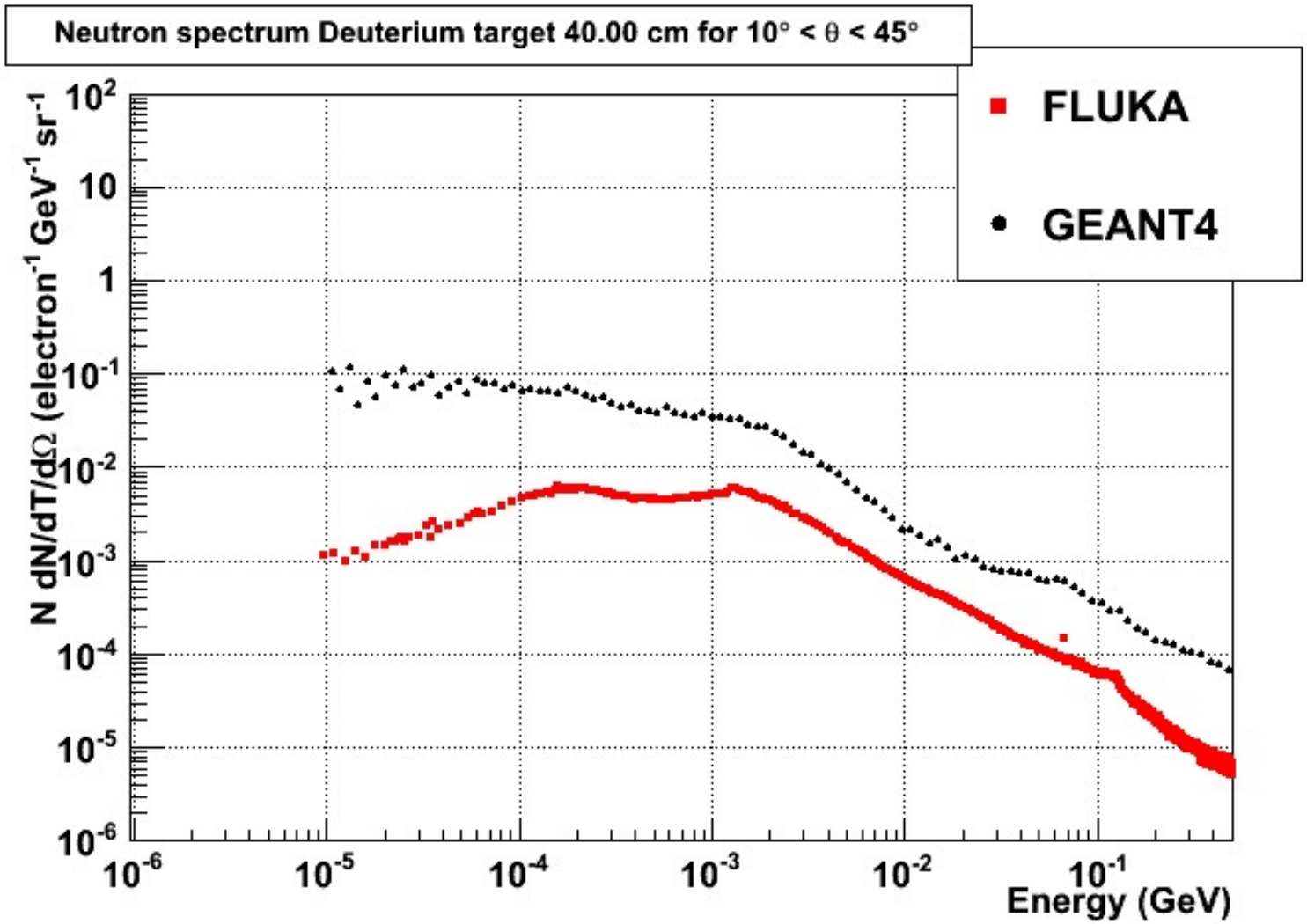
Source term

Source Comparison at different angles, GEANT4 vs FLUKA



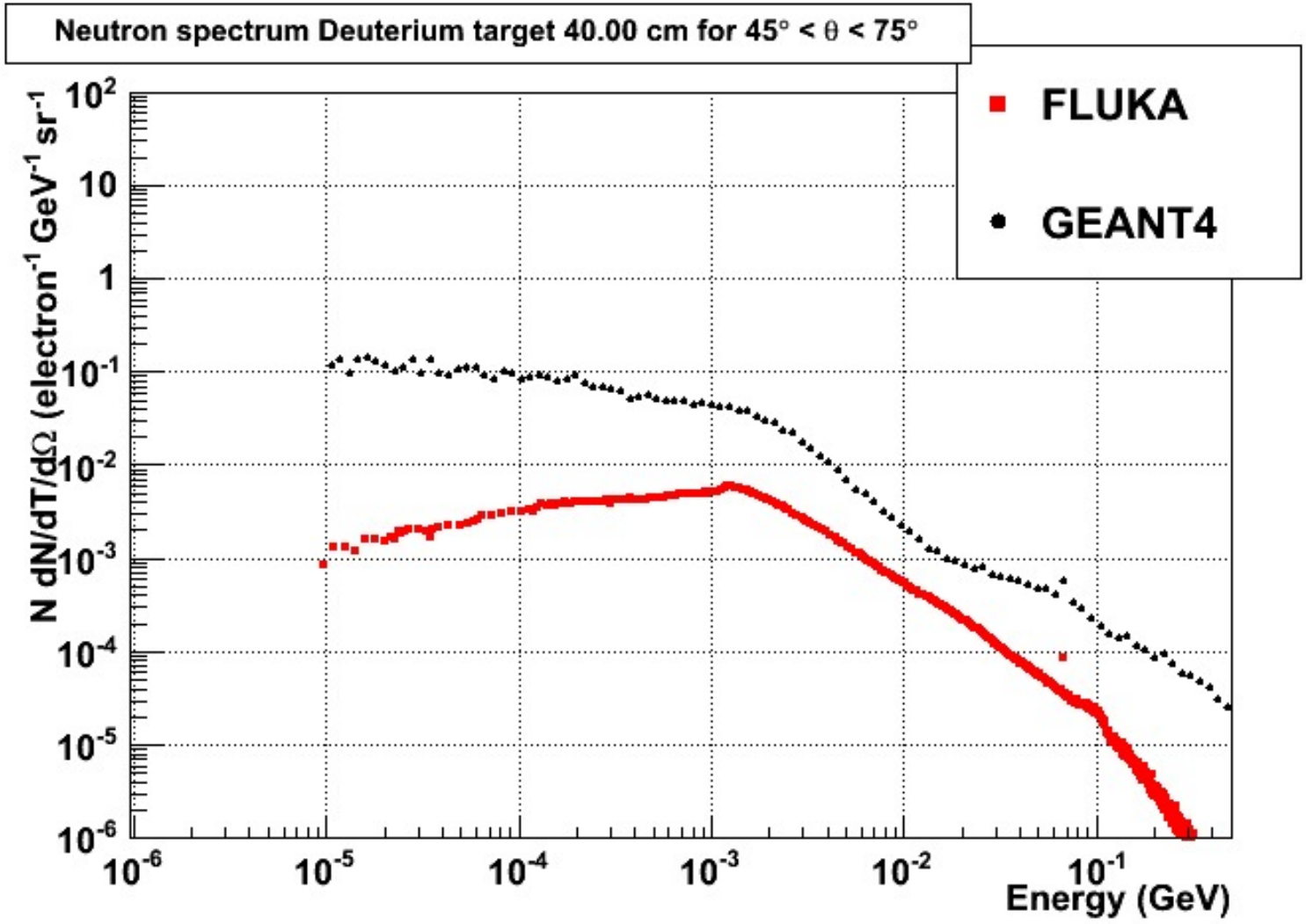
Source term

Source Comparison at different angles, GEANT4 vs FLUKA



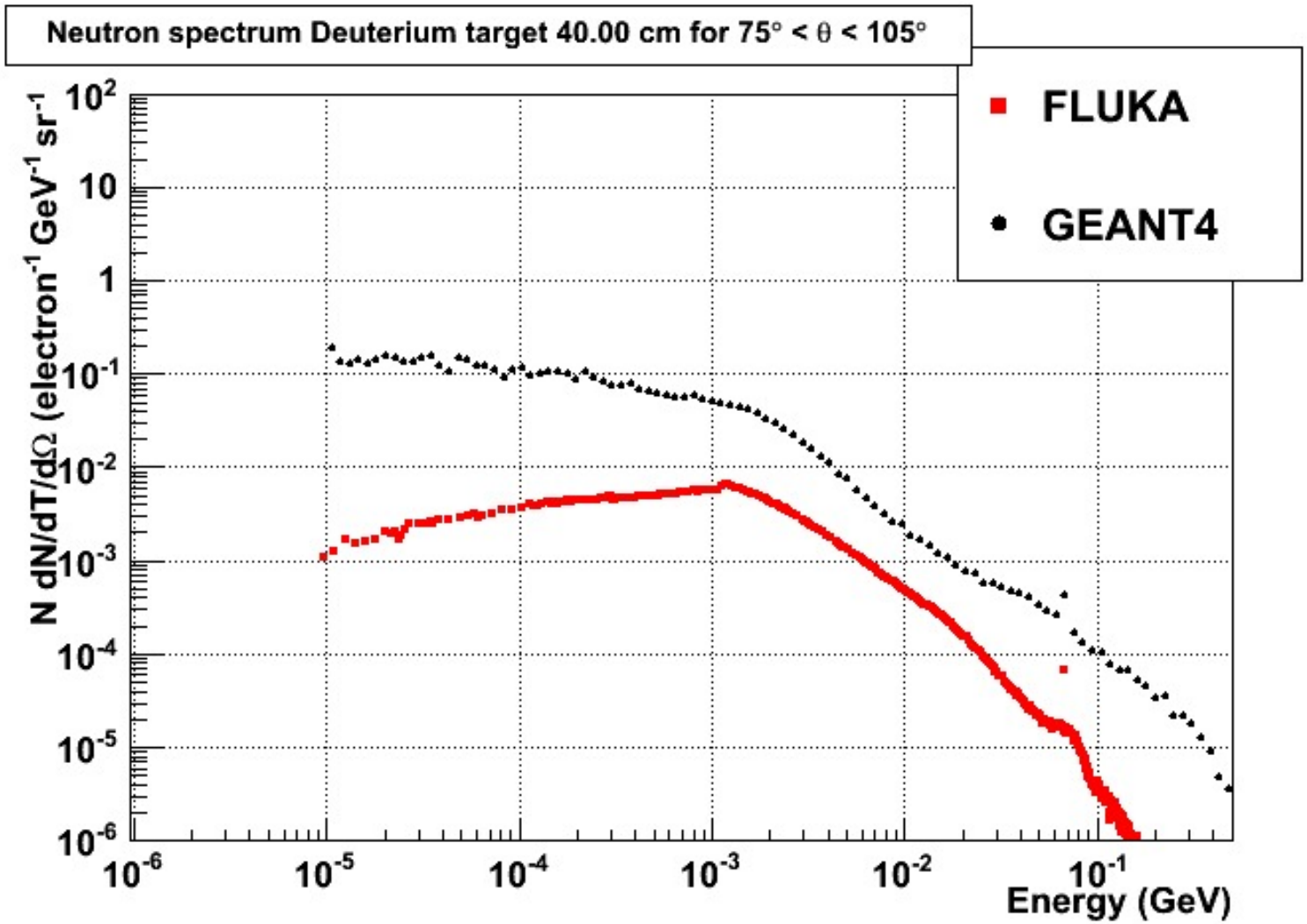
Source term

Source Comparison at different angles, GEANT4 vs FLUKA



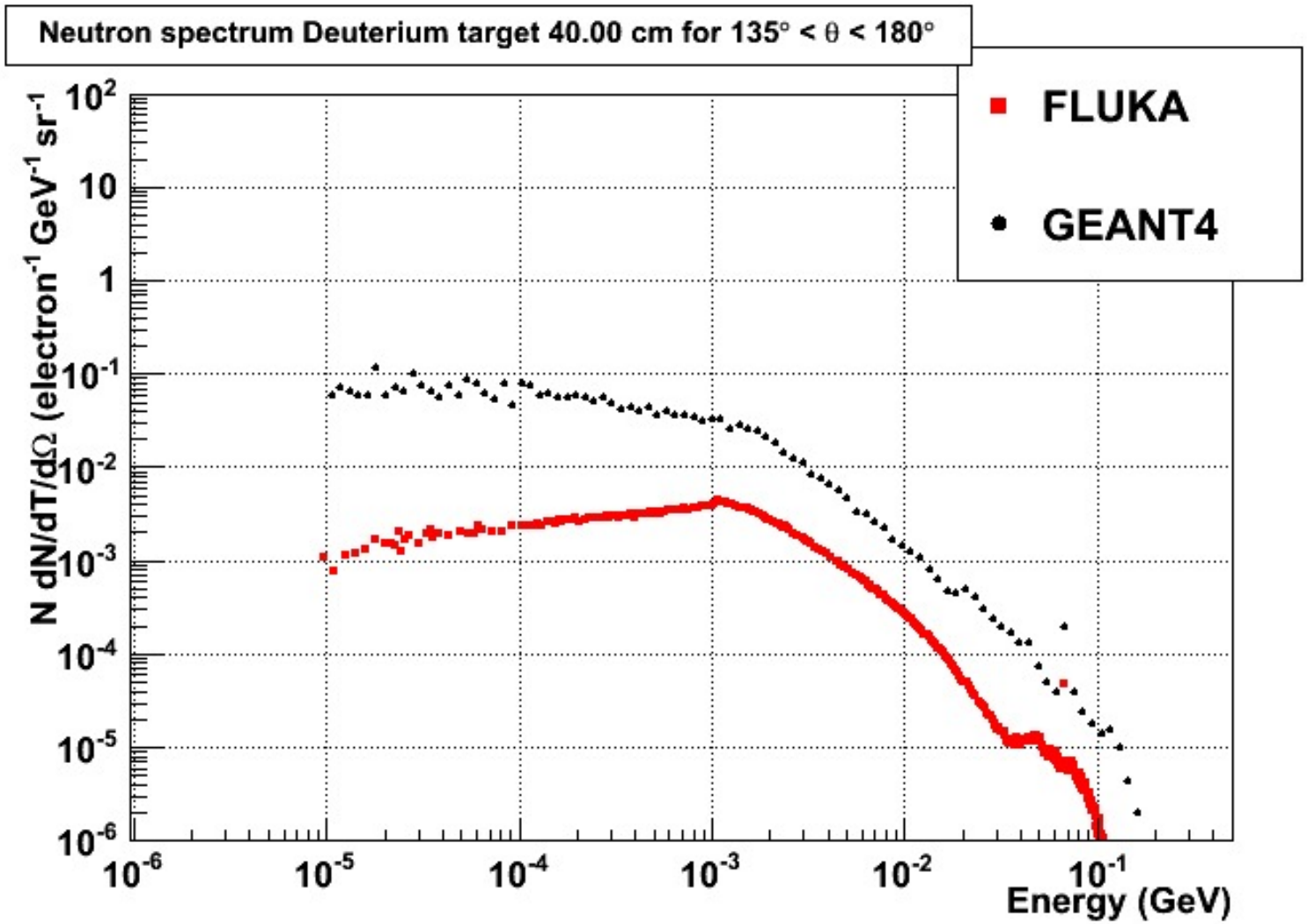
Source term

Source Comparison at different angles, GEANT4 vs FLUKA



Source term

Source Comparison at different angles, GEANT4 vs FLUKA

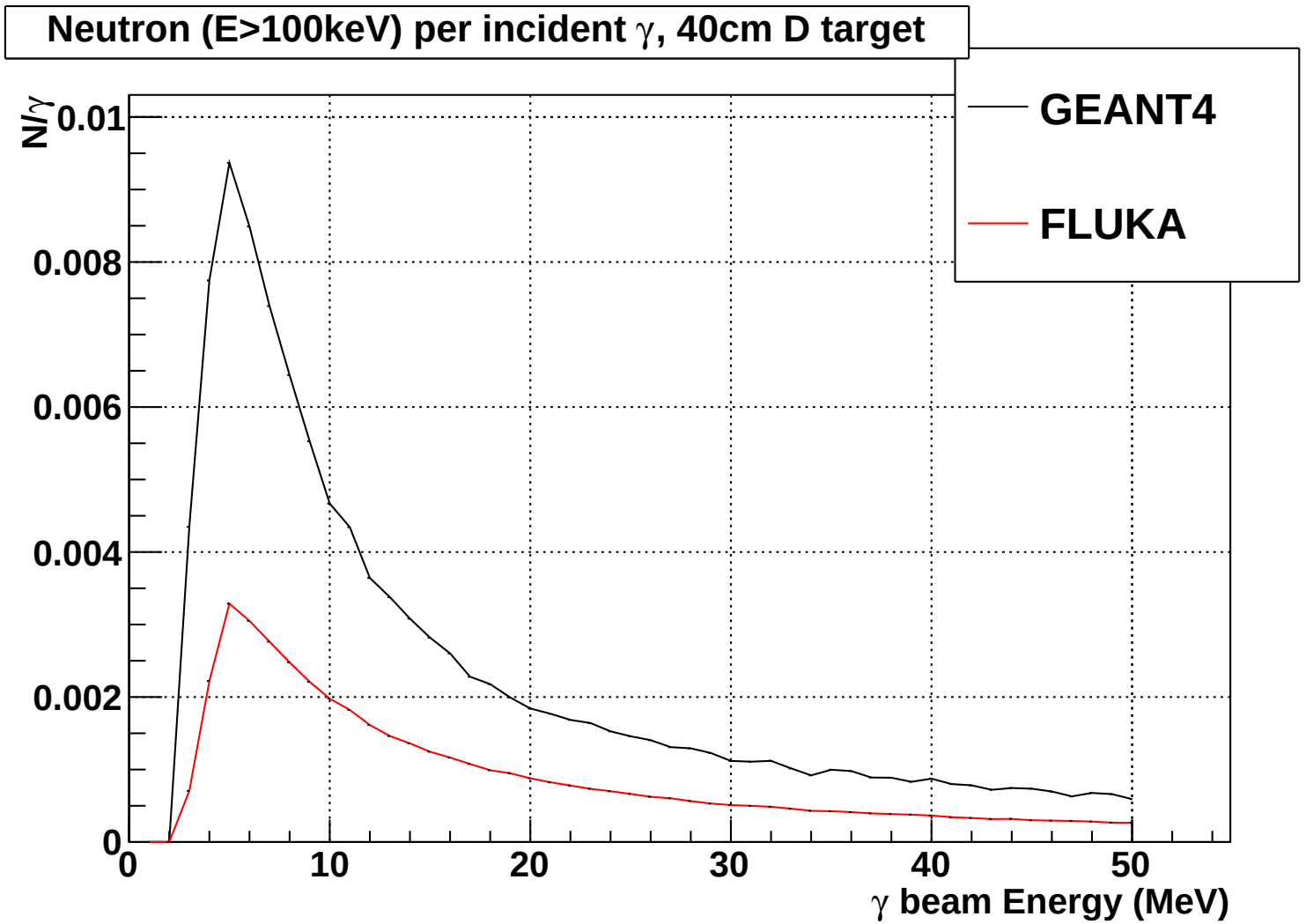


to test if each one is reliable

tested answer photon beam 1-50MeV on D target

using GEANT4 and FLUKA

to test if each one is reliable



Conclusions

- Lack of peak at 20MeV
- better to write a source term for both for Neutron background studies