

# **FLUKA – Geant4 comparison study**

**Simons meeting progress report**

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# Apples to oranges?



## **Strategy overview + updates**

- FLUKA and G4 employ different physics models + implementation strategies for transport → results not trivially interchangeable
- Describe and quantify the intra- and inter-model differences
  - ▶ Differences among G4 hadronic models → HE hadron, cascade, and HP choice affect BIB description within detector ✓
  - ▶ Differences among FLUKA neutron sources (JEFF, ENDF, JENDL, CENDL, BROND) impact BIB passed from MDI → detector
  - ▶ Directly compare FLUKA and Geant4 treatments in simple, controlled setups
- Ultimately: run FLUKA **at scale**
- Updates:
  - ▶ Setup ported over: 1.75cm (200cm<sup>2</sup>) BPE slab with 1 MeV neutron source
  - ▶ Currently validating outputs + reader

## **Roadblocks + next steps**

- No major roadblocks, but in the weeds on small-scale functionality
- Next steps + wishlist
  - ▶ Cross-check material description against G4
  - ▶ Port to apptainer/singularity
  - ▶ Multi-library comparison (JEFF, ENDF...)
  - ▶ Visualization