Simulation, Analysis & Software

Daniel, Sasha, Noam
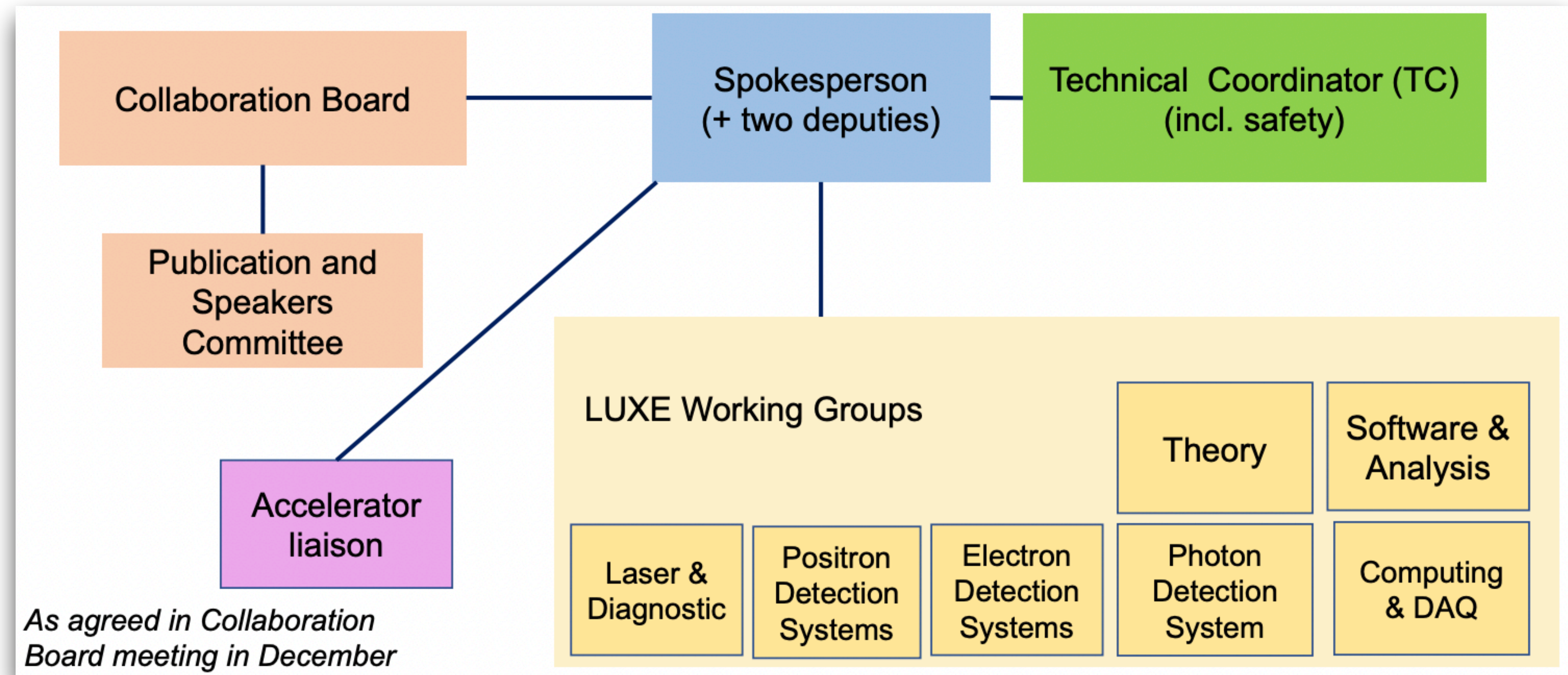
WEIZMANN
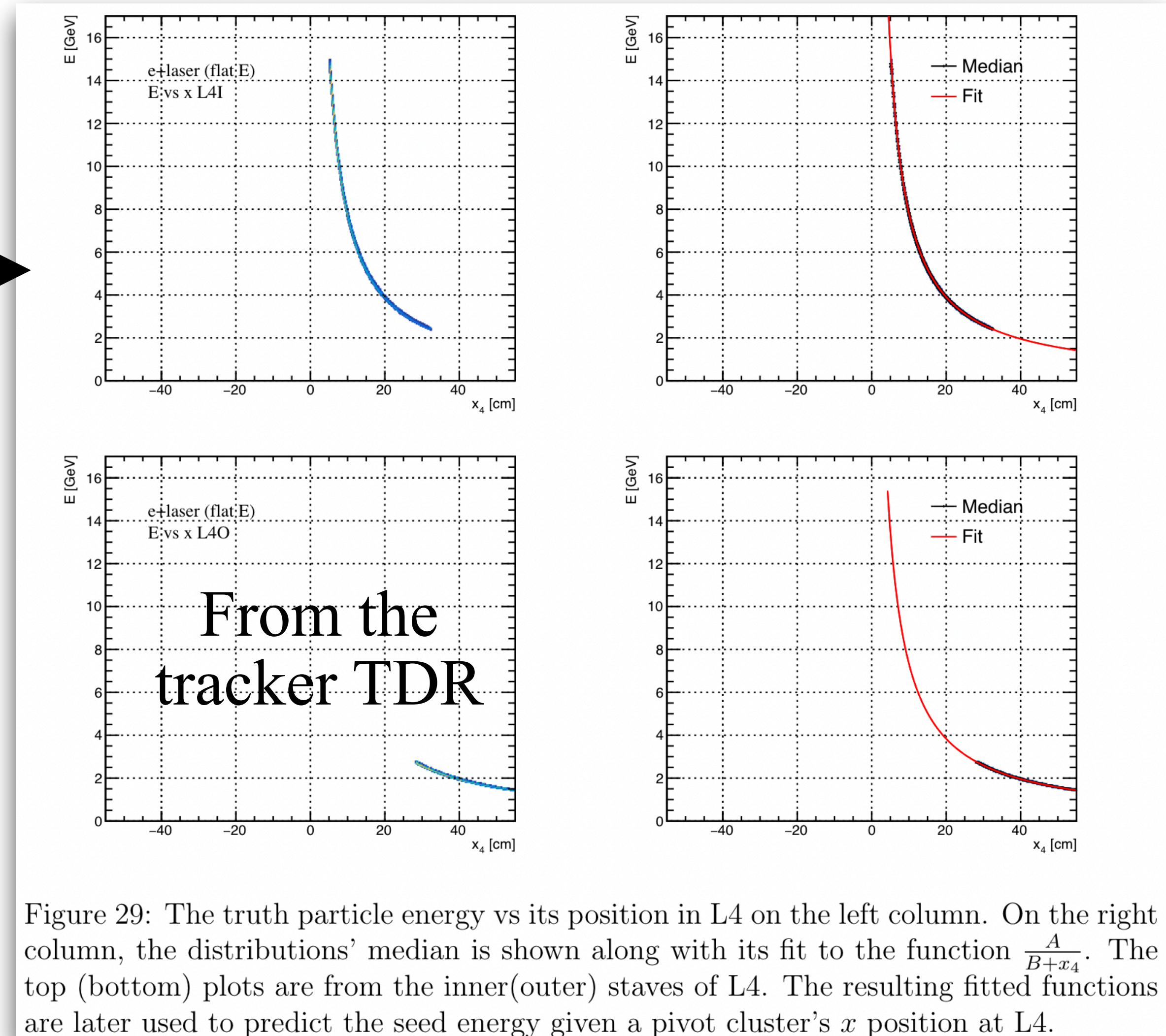INSTITUTE
OF SCIENCE

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News

From Beate:

- ◉ Group name changed to "Simulation, Analysis & Software"
- ◉ Meeting moved to Mondays, 09:00 DESY time
- ◉ Daniel and Sasha will be co-conveners
- ◉ Later (after the review) we will form a software subgroup (volunteers?)

Focus in the coming weeks

- FLUKA radiation map

- Large (simplified) background-only samples

- Flat signal samples for B-field predictions

- Kickoff NPOD studies with the full LUXE setup
  - Background from the dump/environment
  - pass the MadGraph signal through the model

- More BXs for the TDR (only 10 last time)

- New bits in the model
  - John: cameras?
  - Sasha: backplate for the calo? Iron in shielding?

- Anything else?

From the tracker TDR

Figure 29: The truth particle energy vs its position in L4 on the left column. On the right column, the distributions' median is shown along with its fit to the function $\frac{A}{B+x_4}$. The top (bottom) plots are from the inner(outer) staves of L4. The resulting fitted functions are later used to predict the seed energy given a pivot cluster's x position at L4.

News from Sasha

- For the Cherenkov+Screen:
  - 1000 BX for xi=0.15, 0.3, 0.5 and 0.7 processed with G4
  - these are essentially all MC files available for these xi.
  - Tracks information is smooth and good for edge reco.
  - Need to check the response of the straws
- Also 100 BX for xi=5
- Generating other xi (1000 BX for xi=1 and 100 BX for xi: 1.2, 1.5, 2, 3, 4, 7)
  - 1k for xi=1 might take few days to process completely
- Running in parallel background for electron-laser

Energy deposited in the screen

- 1000 BX for ξ=0.7 and ξ=0.5
- 1010 BX for ξ=0.15 and ξ=0.3
- Cell_x: 0.5 mm

Deposited energy in the screen

Deposited energy in the screen
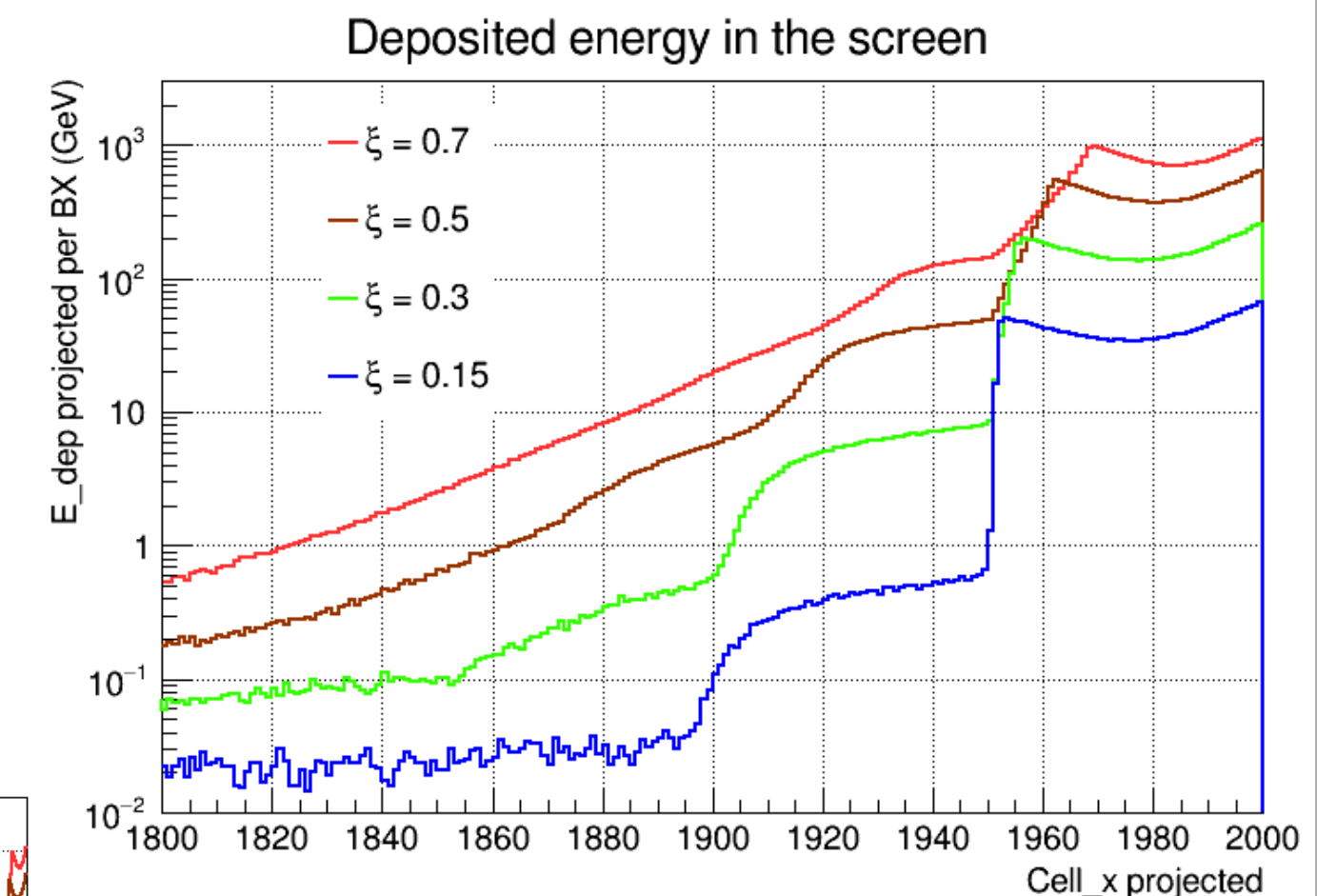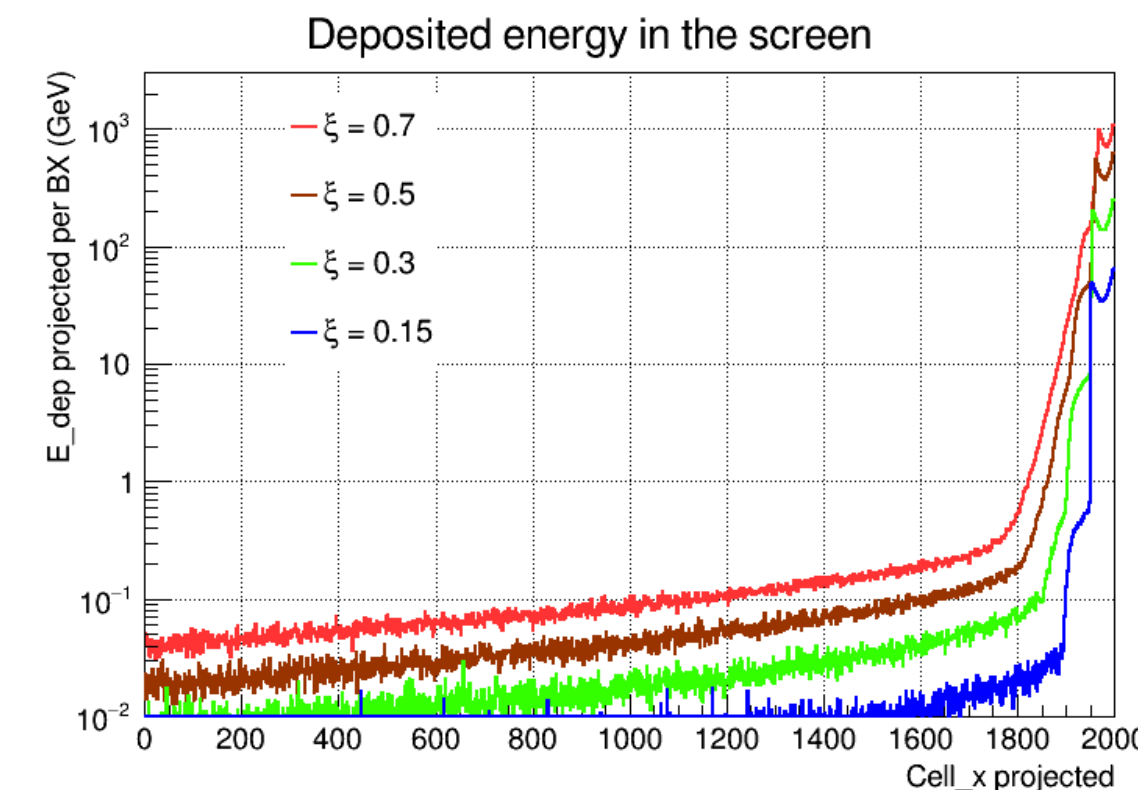
News from Kyle

- GDML (Geant4) -> FLUKA geometry conversion successful
- FLUKA runtime tracking errors resolved

- Small scale test finished on HPC at QUB (10000 primaries)
- Small tests have been done on the DESY cluster and were successful
  - 5000 primaries (10 jobs x 5 runs x 100 primaries)
    - About 2.5 hours with current geometry
    - Bottleneck occurs with Boolean expansion of FLUKA geometry at runtime
- The goal now is to increase the overall number of primaries
  - Stewart and Kyle are looking into adapting the geometry conversion to reduce the runtime overhead and Kyle is running tests generating more jobs (~100-1000)