Fast Simulation of Calorimetry showers (FastSim)

Mikołaj Piórczyński
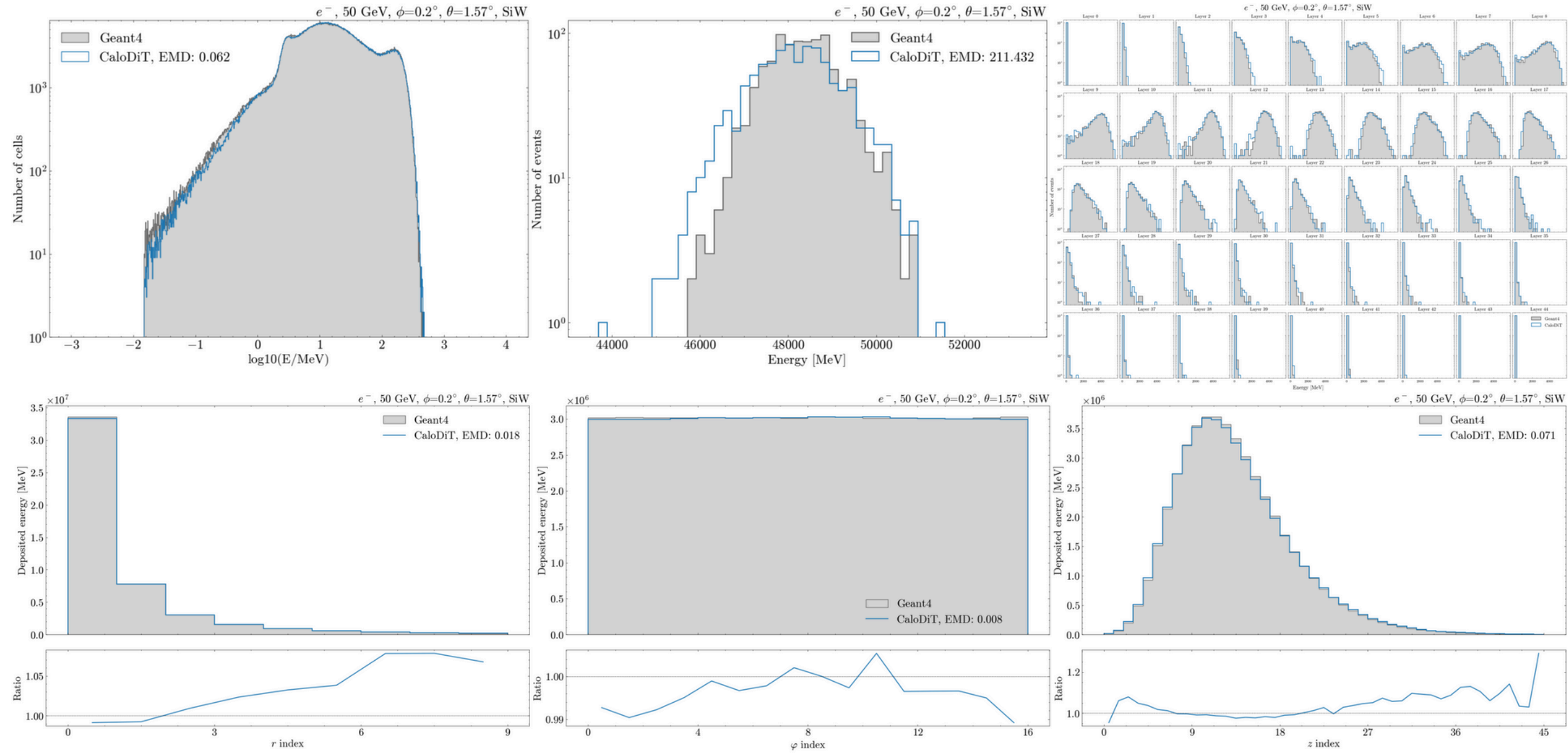FastSim Summer Students Meeting, 26.07.2024

What was done

1. Finished implementation of DPM-Solver(++)
2. Evaluated EDM w/ power energy distribution
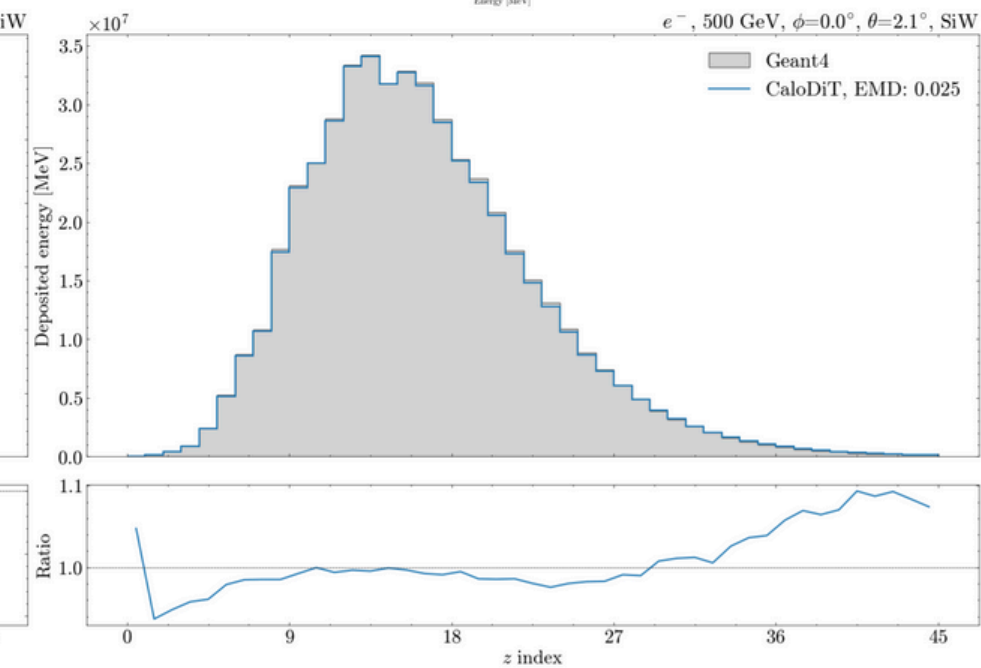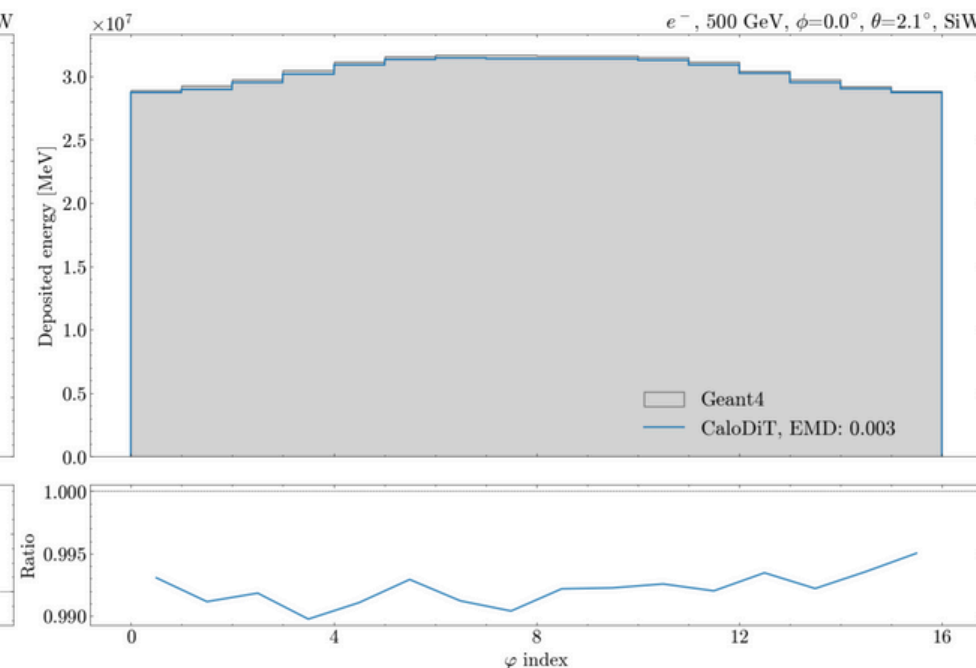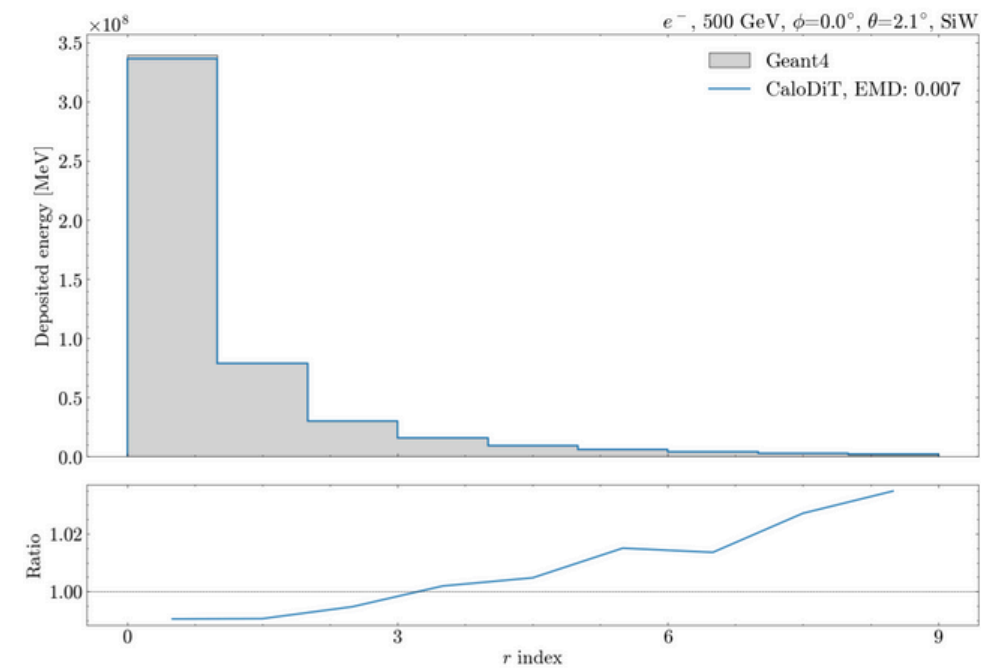3. EDM w/ uniform energy distribution training in progress
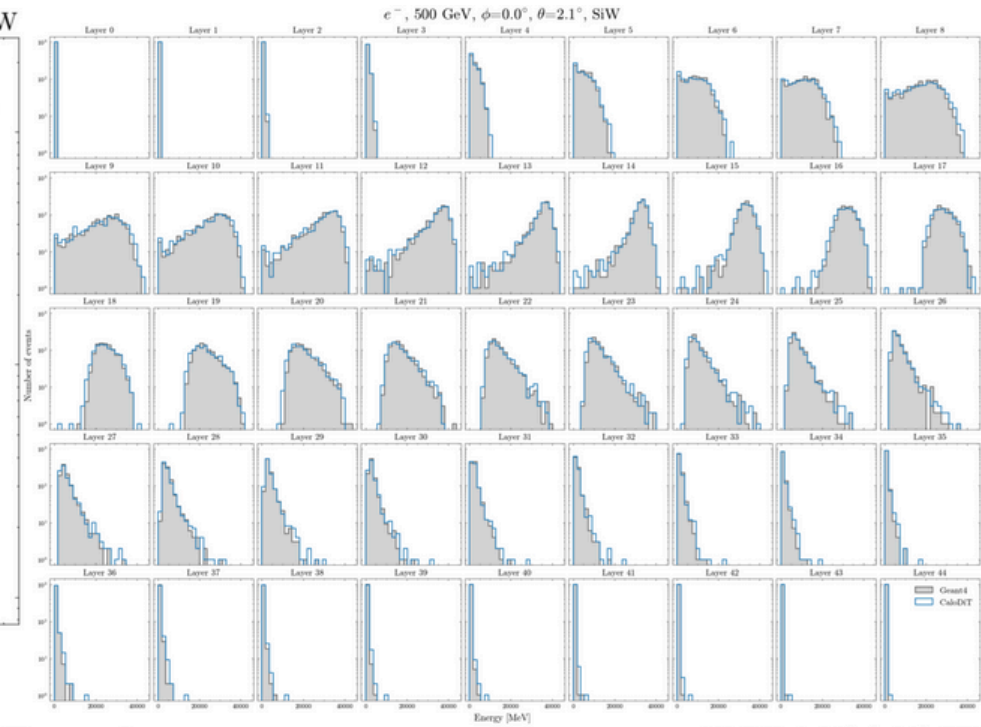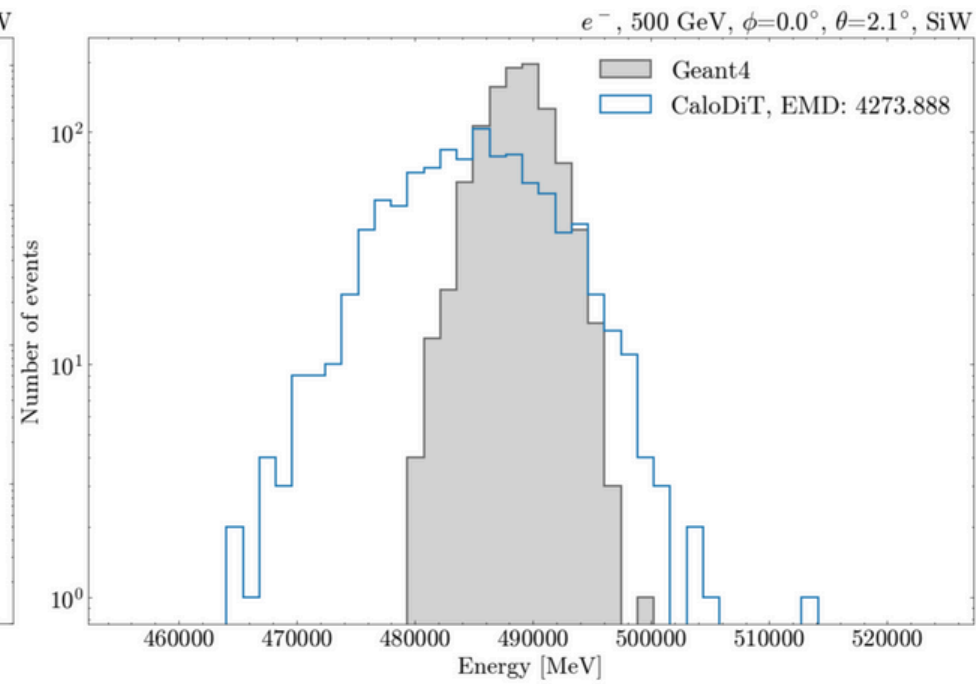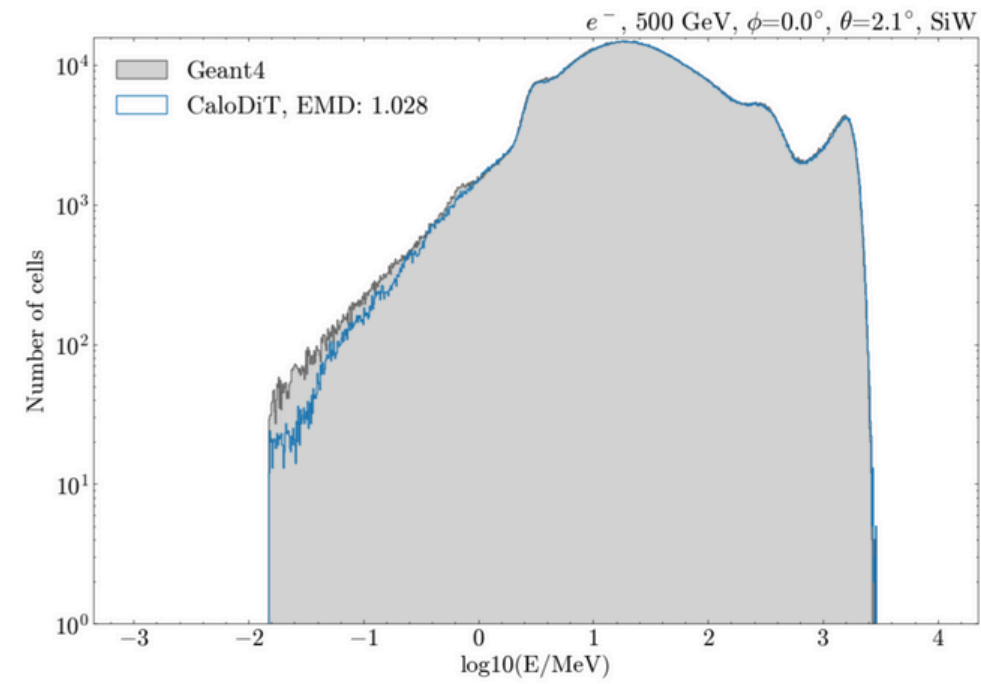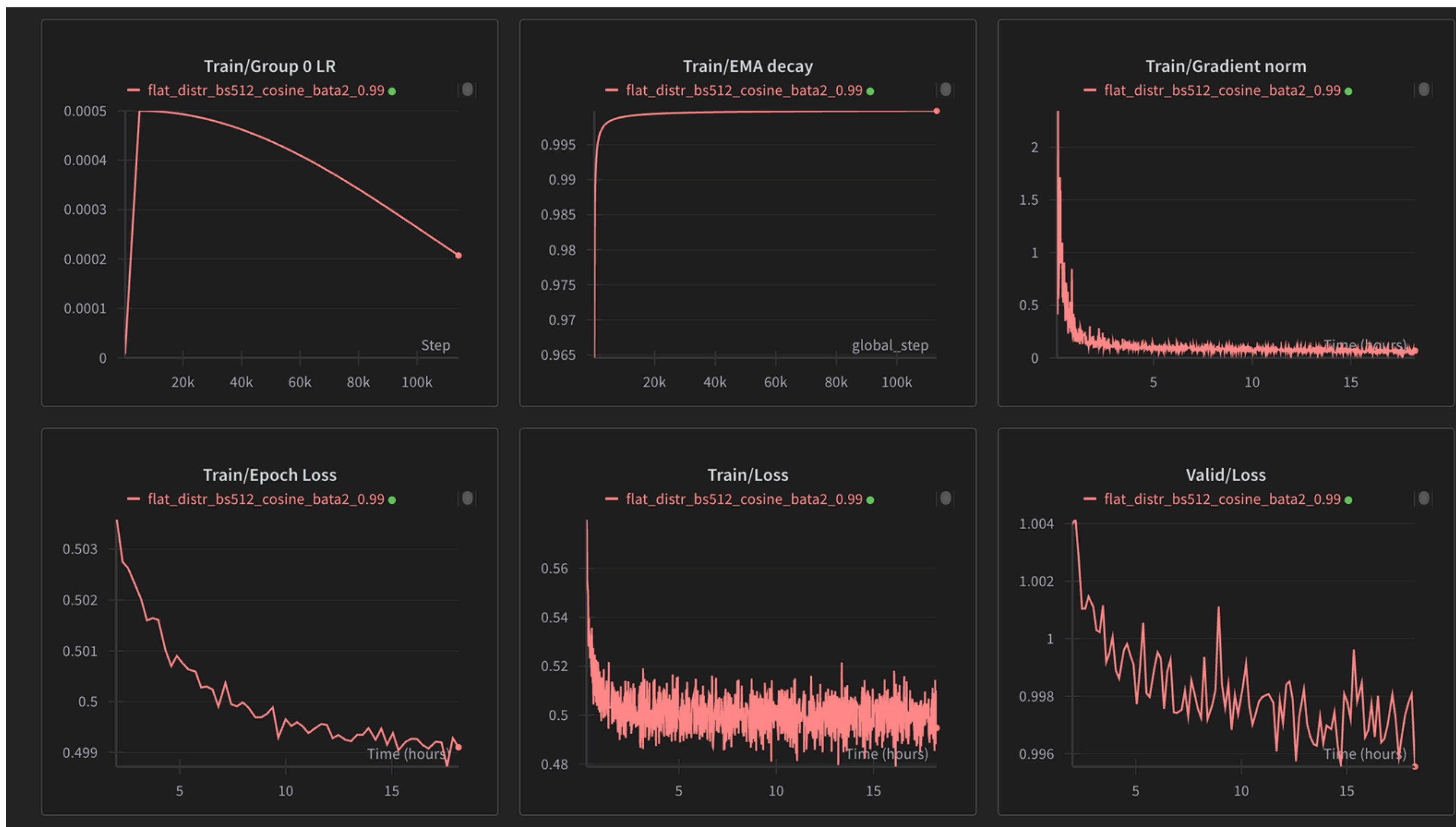
Code: https://gitlab.cern.ch/mpiorczy/diffusion4fastsim

power spectrum, Heun, 63 steps, ODE
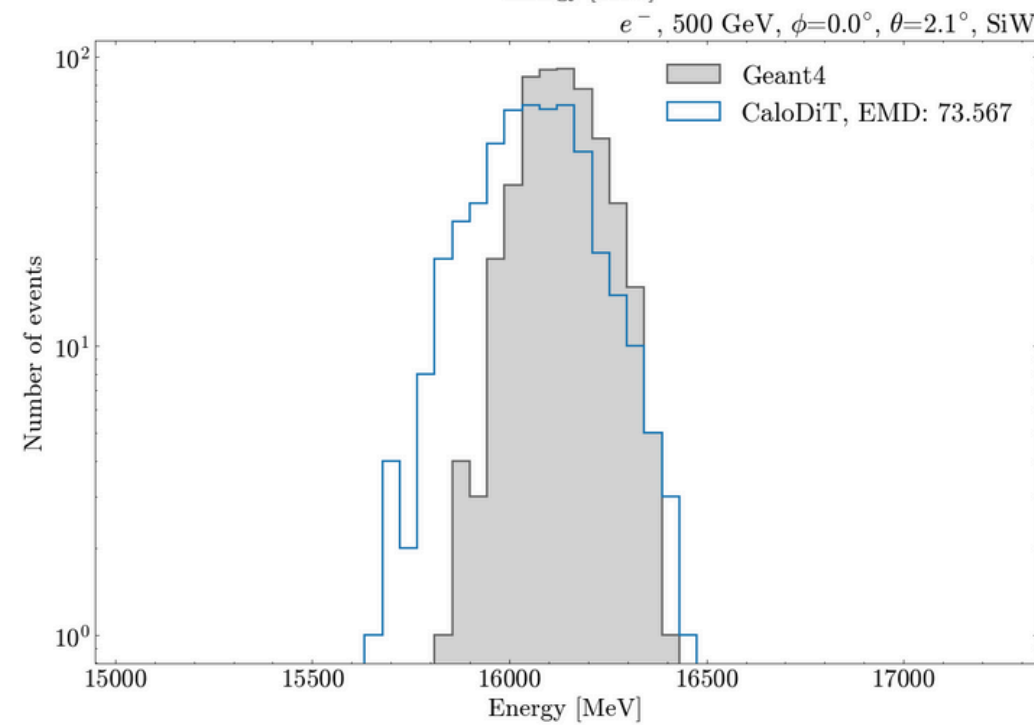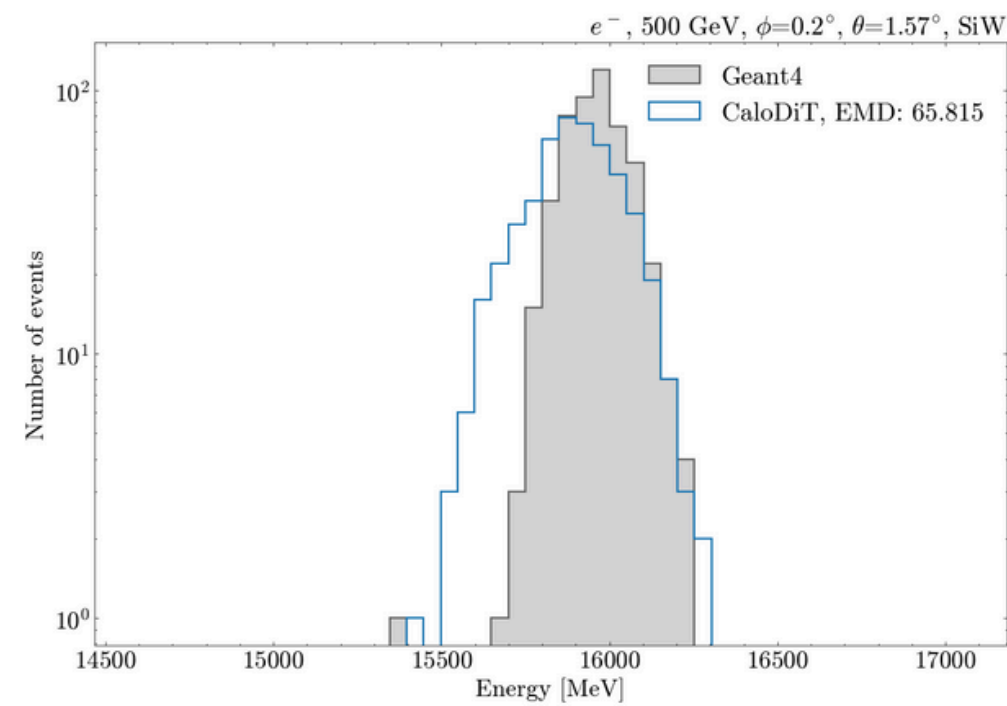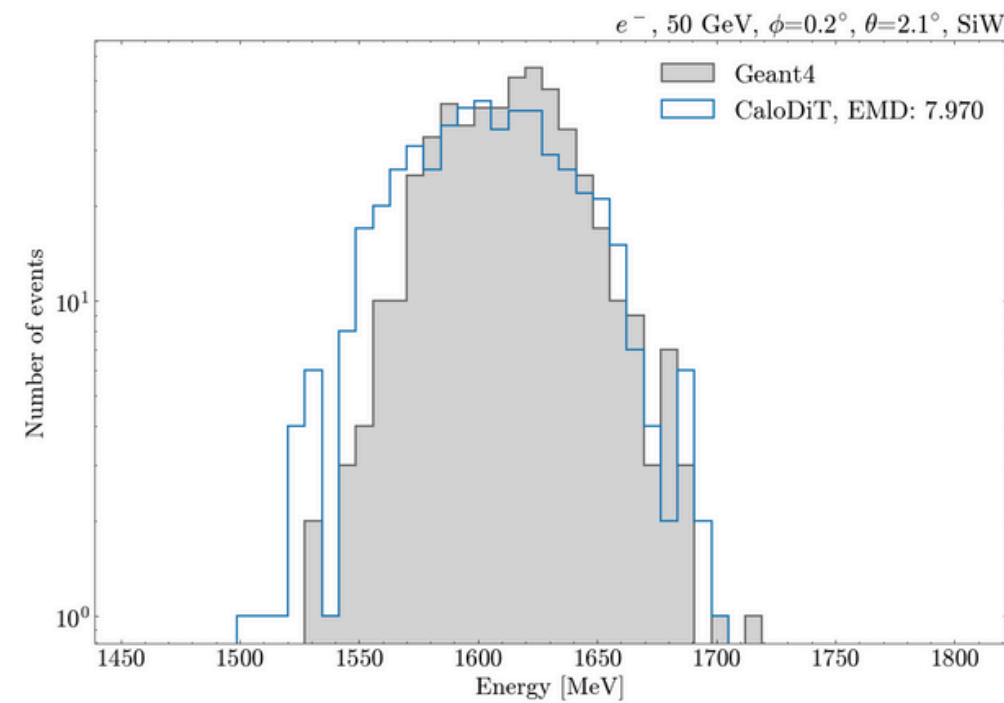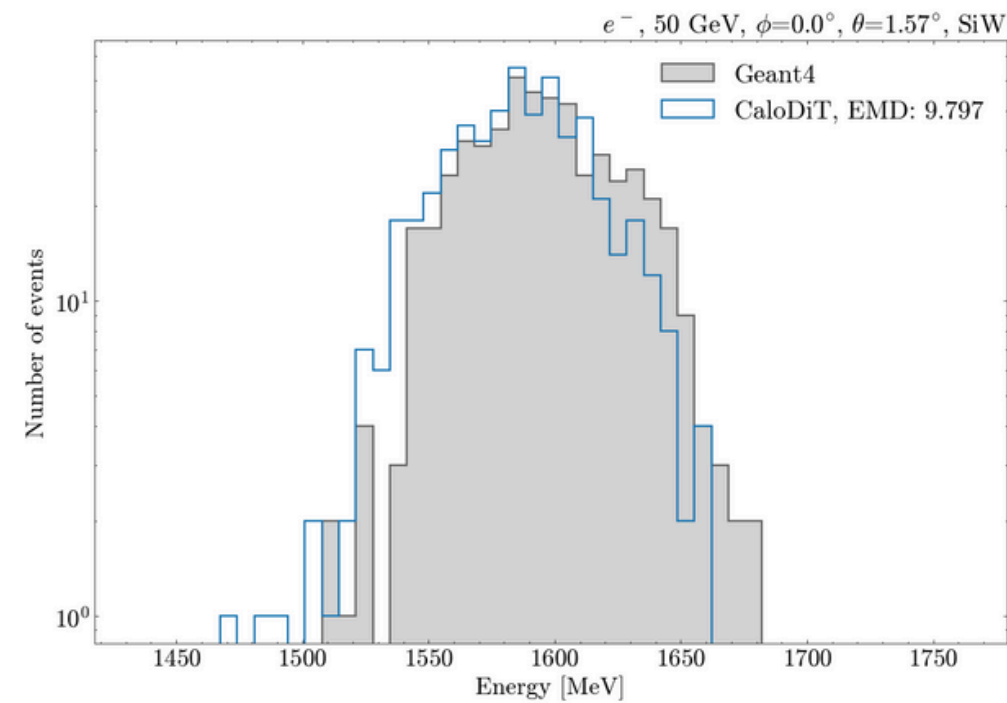
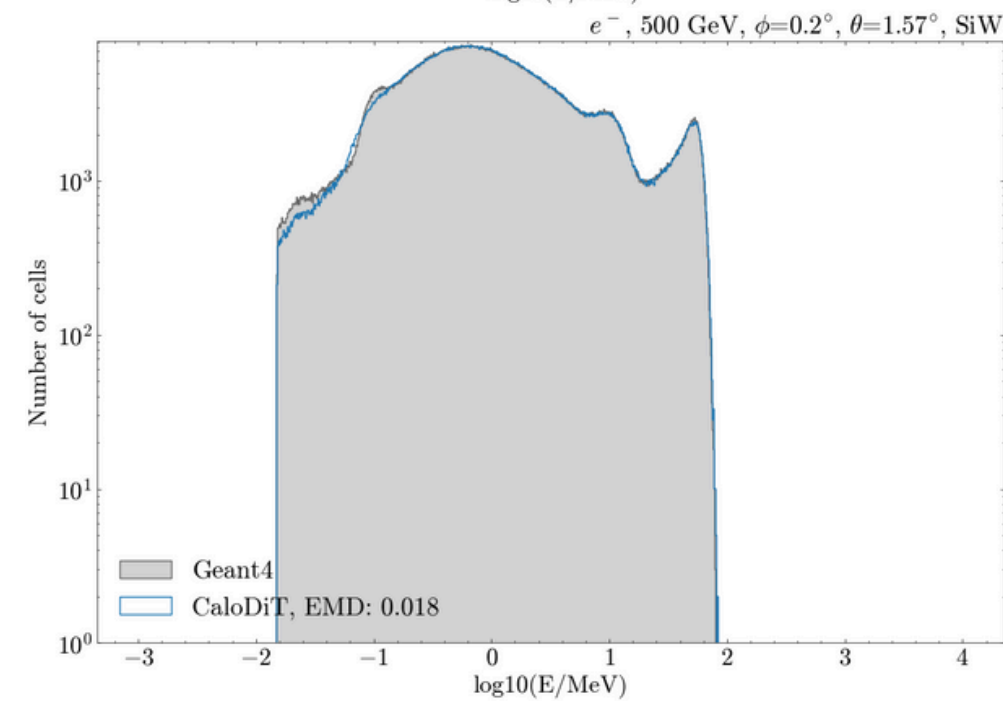# power spectrum, Heun, 63 steps, ODE
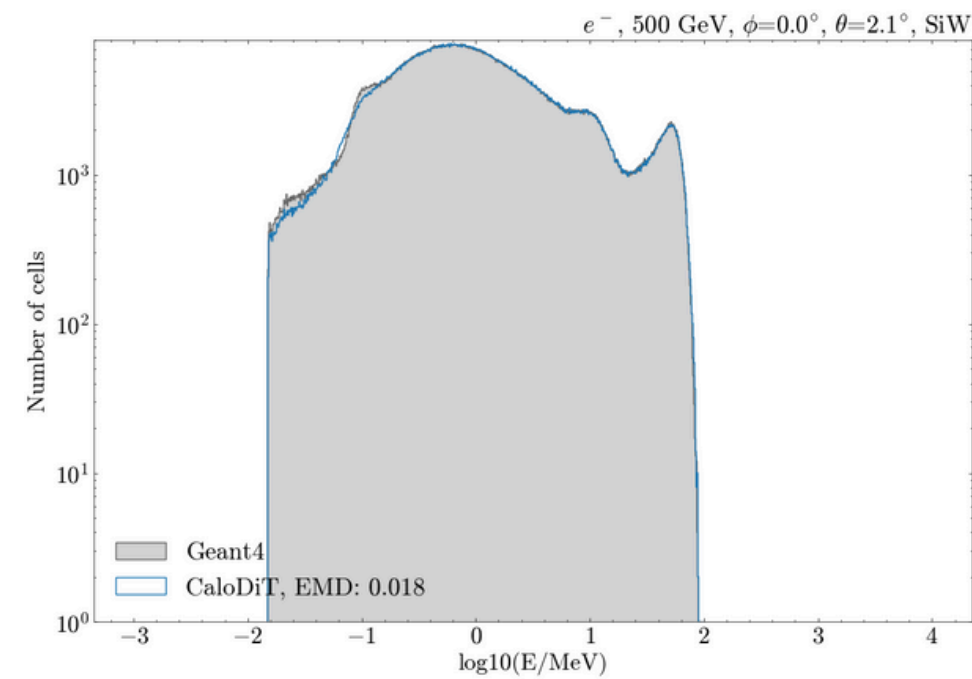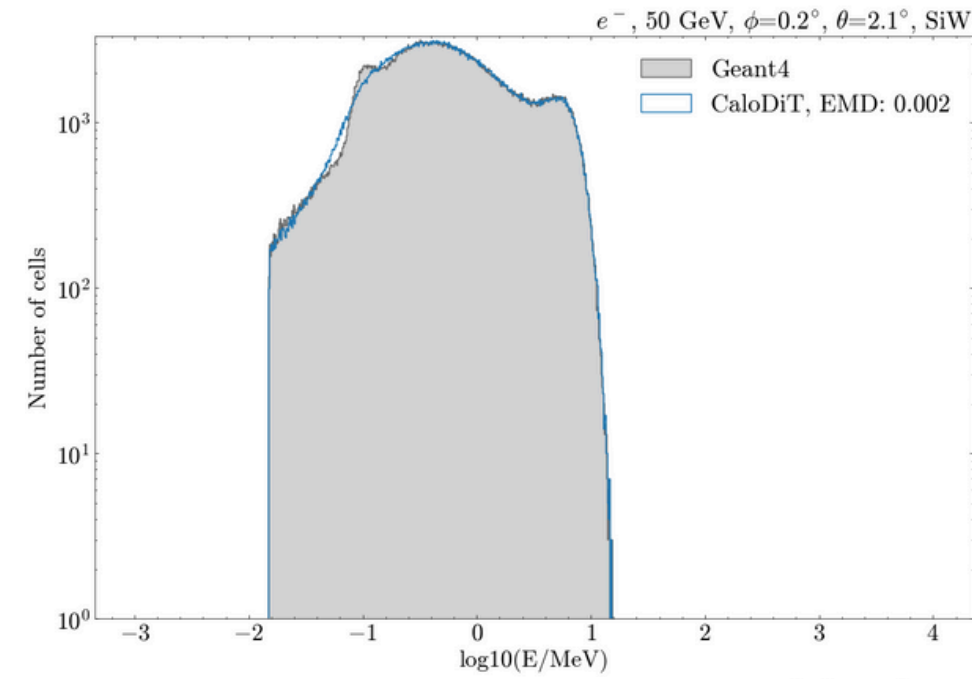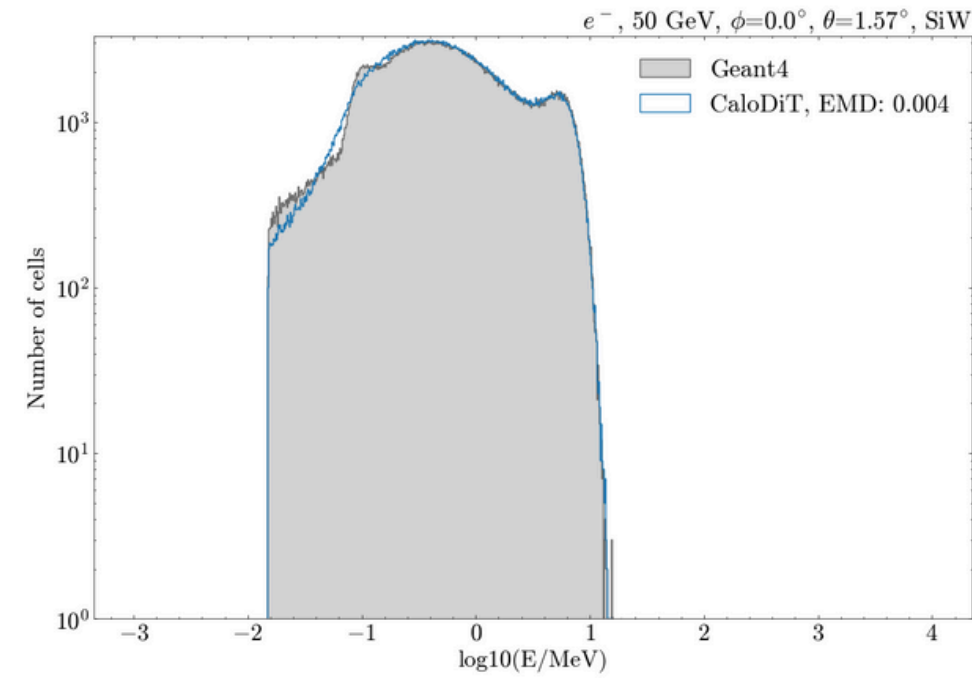
EDM w/ uniform energy distribution

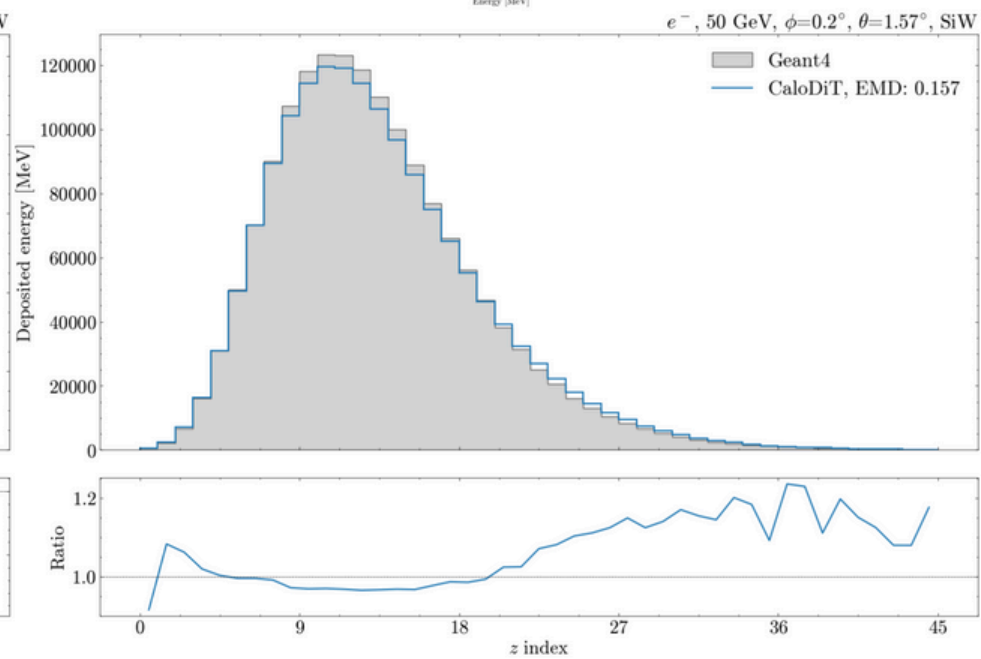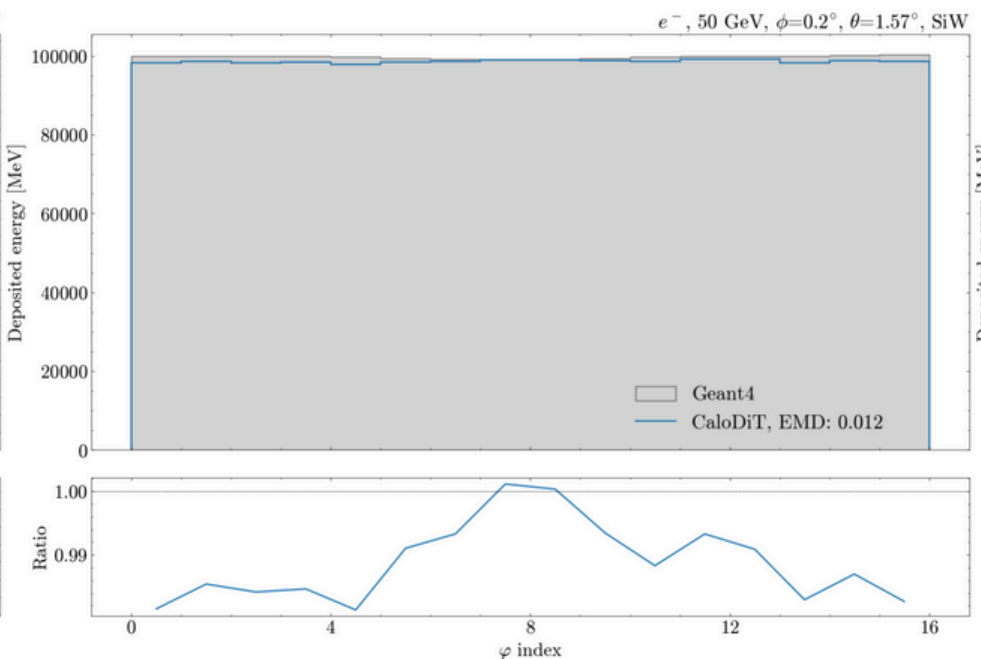# EDM w/ uniform energy distribution
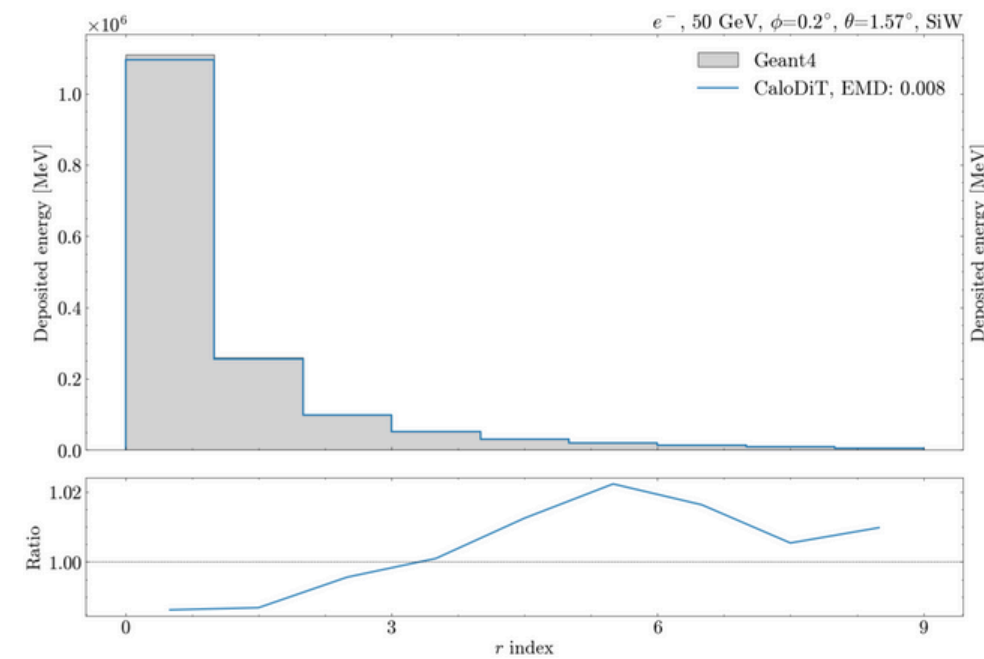

better total event
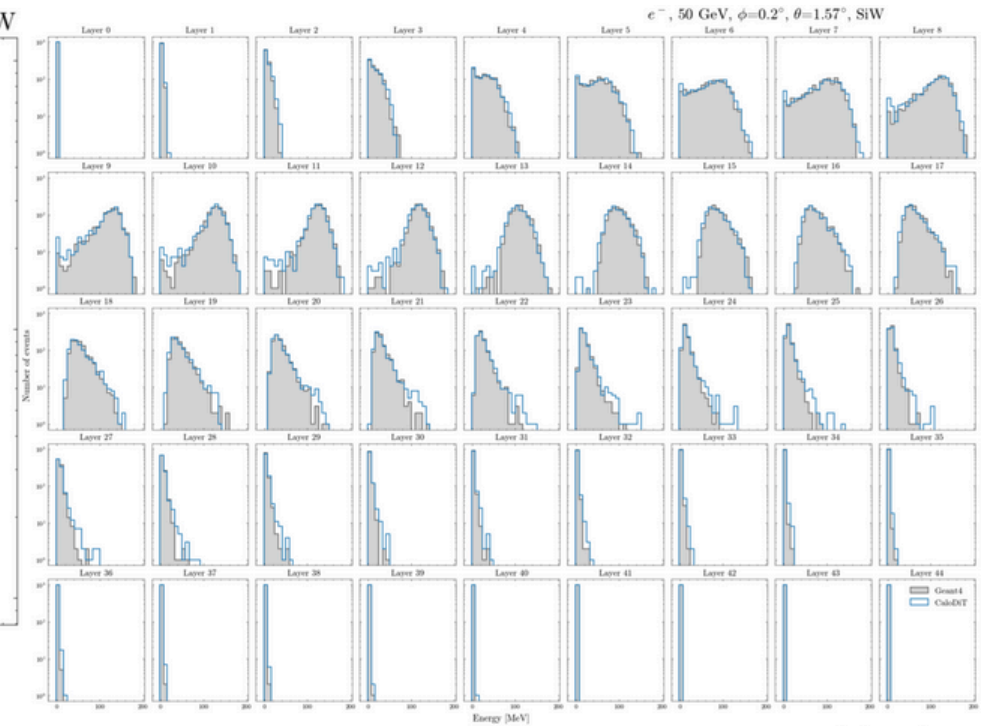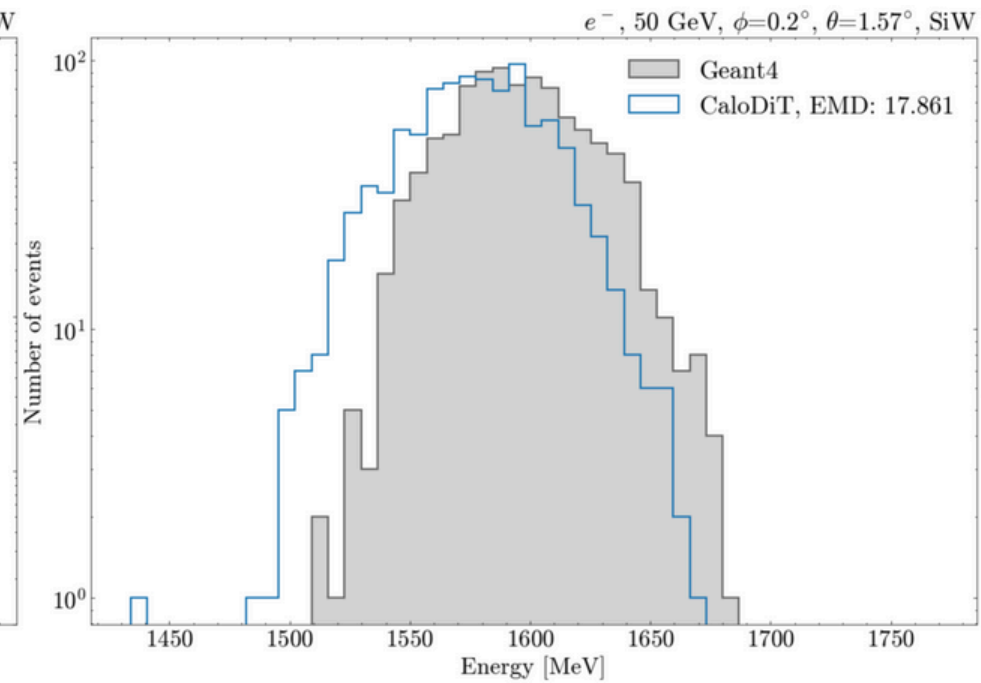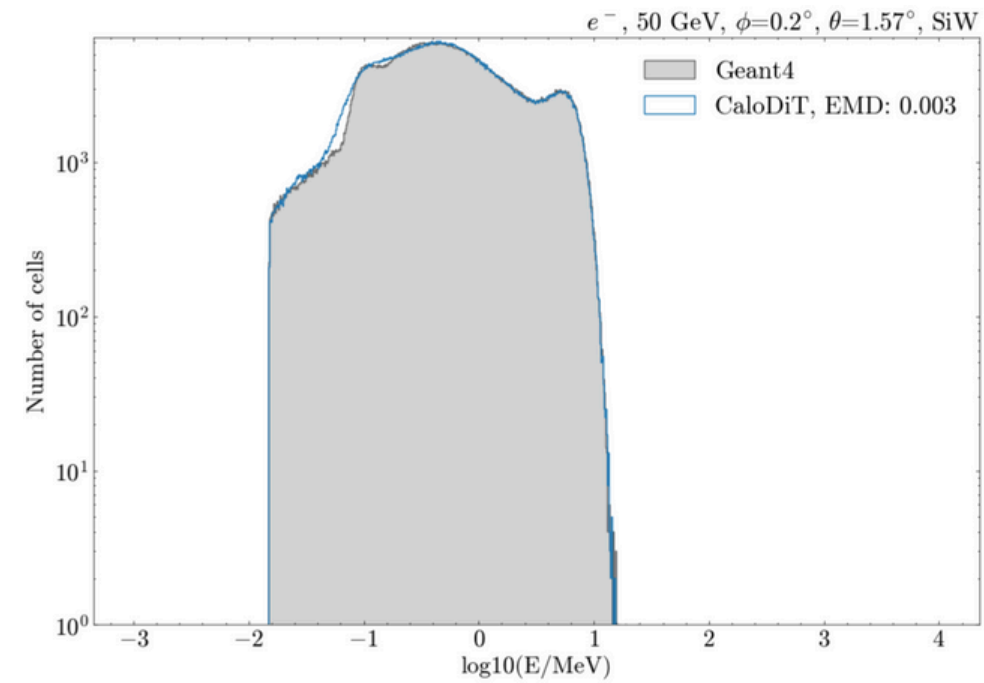energy distribution

EDM w/ uniform energy distribution

more problems with generating low-energy cell hits

Preliminary: DPM-Solver++ (20 steps)

Next up

1. Full evaluation of EDM trained on uniform energy distribution (Heun, LMS, DPM-Solver++, SDE-DPM-Solver++) -> results probably on Monday
2. Consistency distillation
3. Maybe: Easy Consistency Tuning (ECT): https://arxiv.org/abs/2406.14548