Update on Forward Spectrometer and Background Simulations

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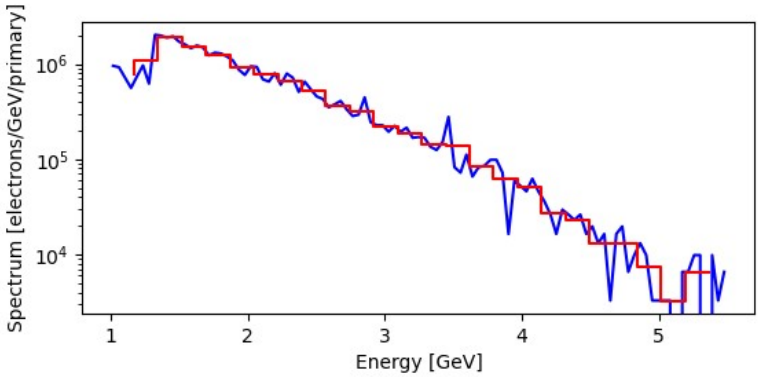
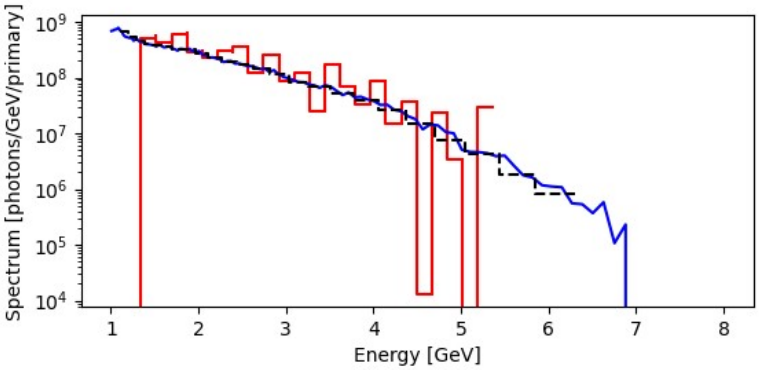
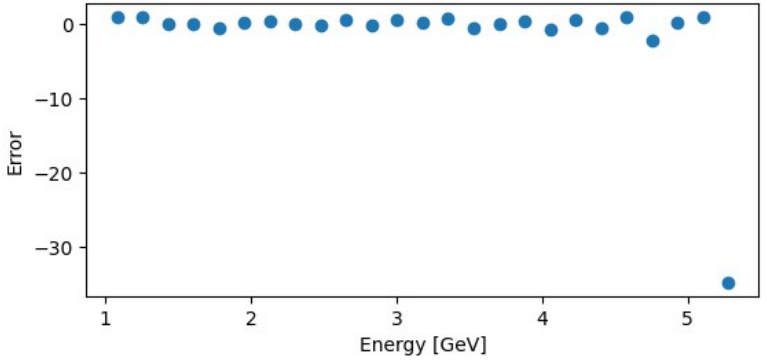
Updates

- Strange hotspots in previous scintillator response plots artefacts of simulation – plots in CDR updated
- Change of material for detectors – now LANEX (assumed Gd2O2S:Tb)
- Scintillation properties of LANEX similar to LYSO; higher light yield (60000 photons/MeV) but different peak wavelength (545 nm) and decay time (~600 us)
- Deconvolution also implemented on trident results
- Included LANEX profiler in results

Deconvolution







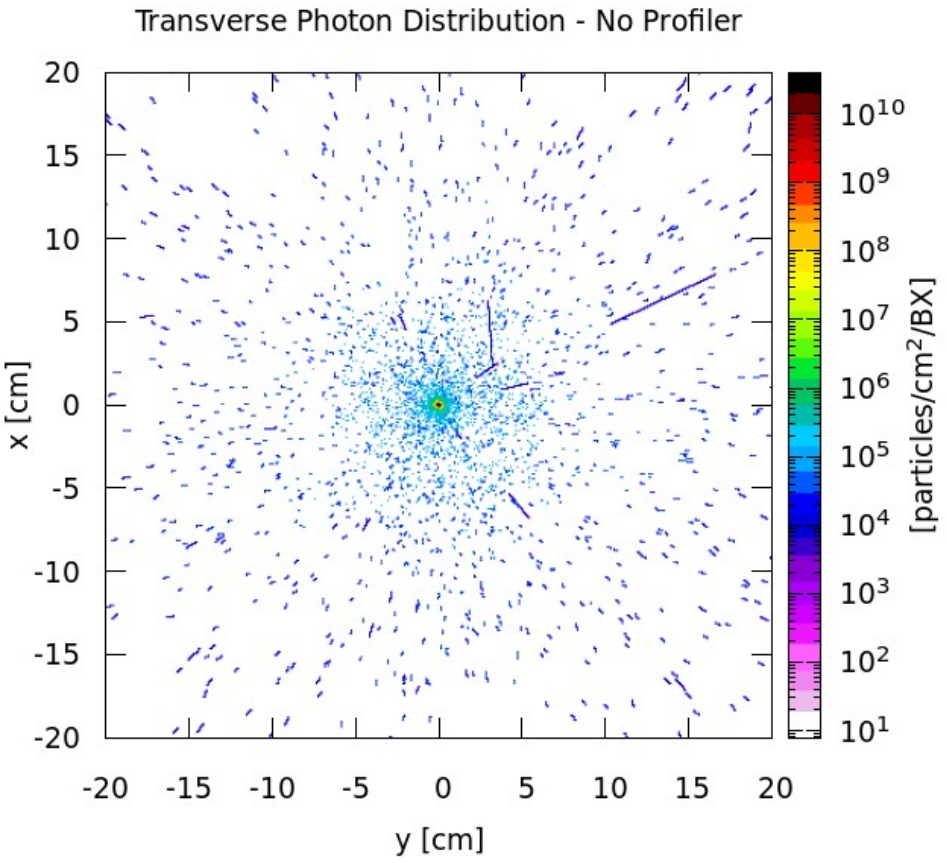
Deconvolution

- Needs good statistics from simulation to obtain good reconstruction
- Previous results for 10 x 10**6 primaries
- Simulation currently running (with updated detectors too) with 10 x 10**7 primaries for comparison

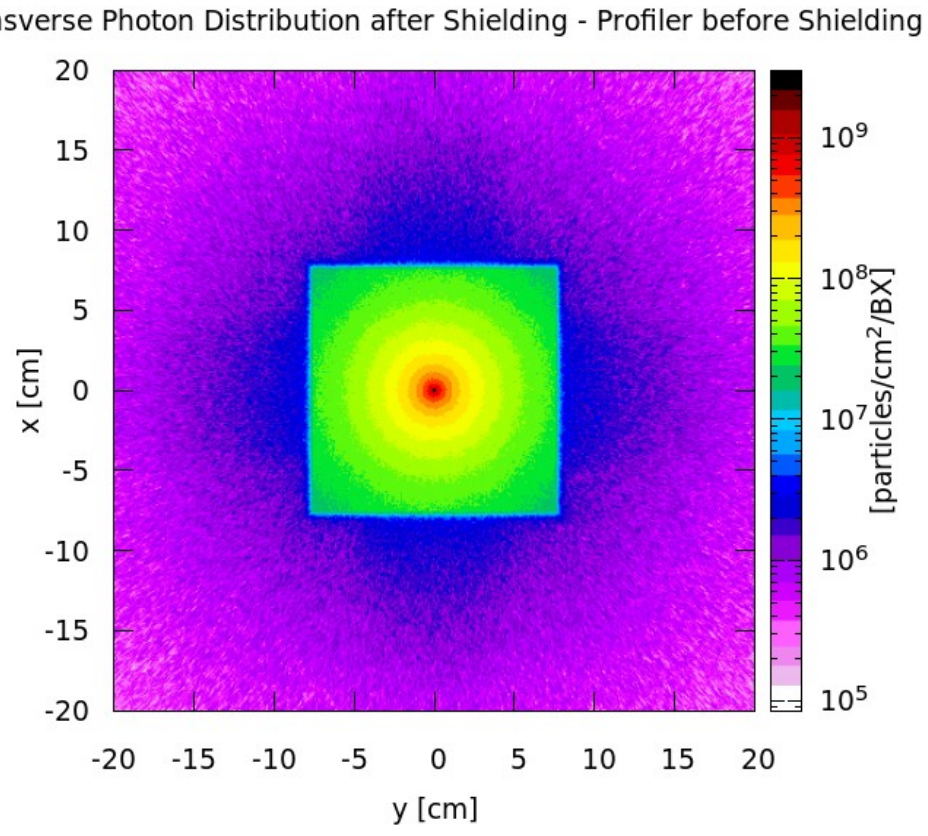
Profiler

- Tested both 50 cm before and 50 cm after shielding
- Material assumed to be LYSO (LANEX not decided at time of simulation but should have similar results) – 5 x 20 x 5 cm with 50 x 50 um bins
- Results show distribution of photons ~100 cm after shielding

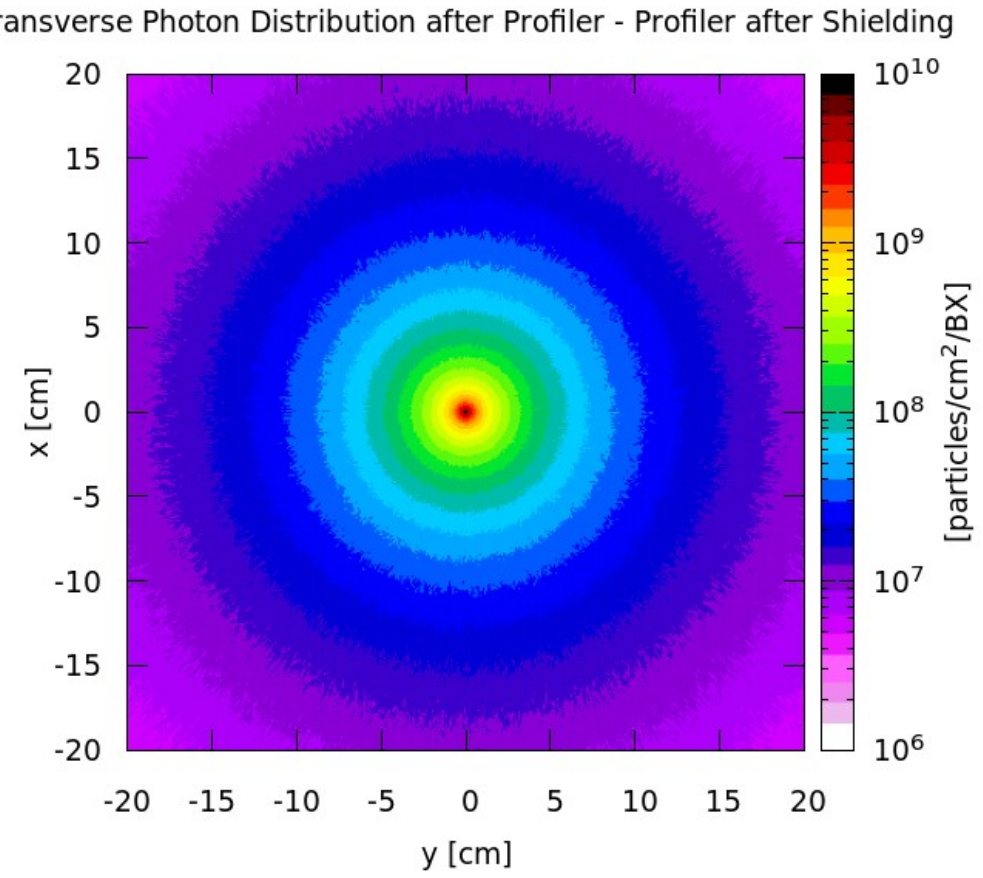
Without Profiler



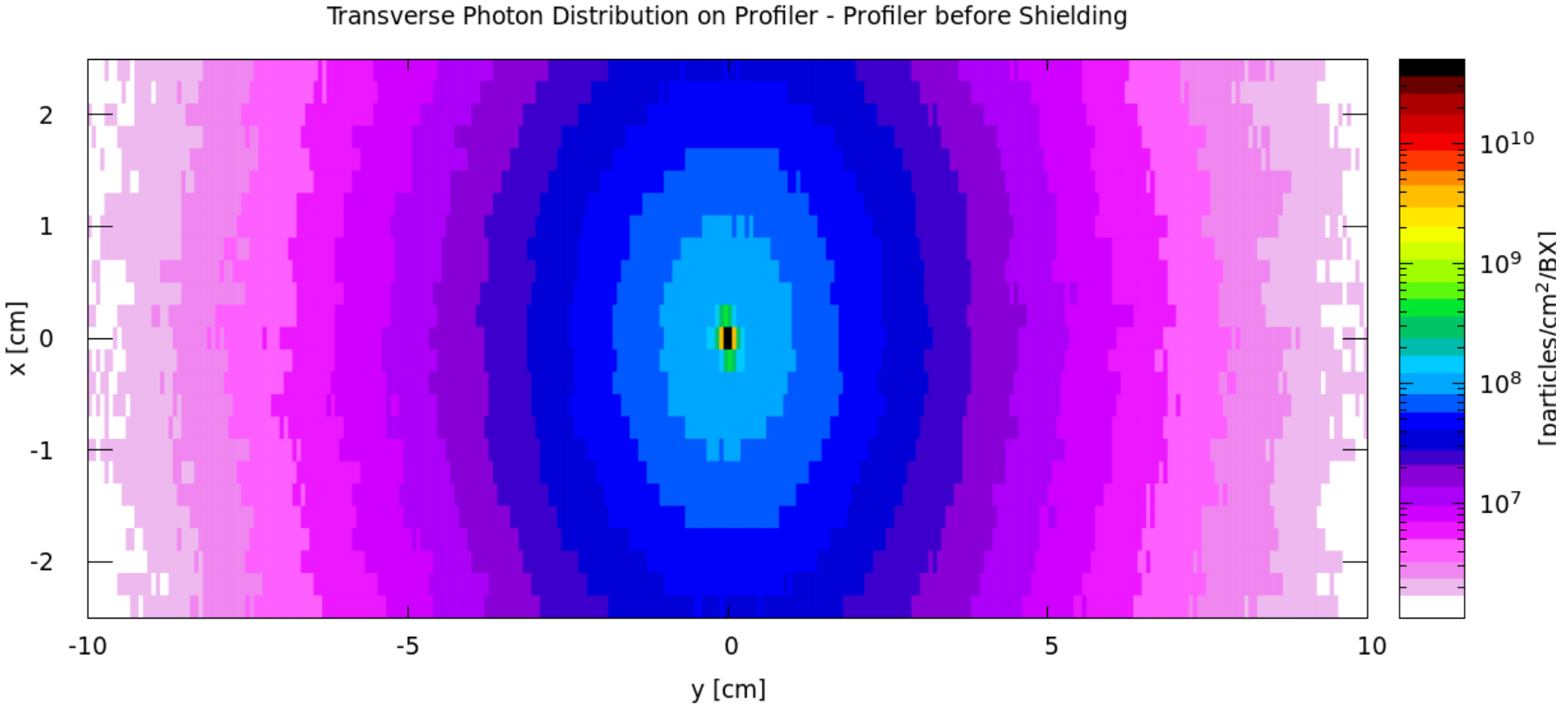
Profiler before Shielding



Profiler after Shielding



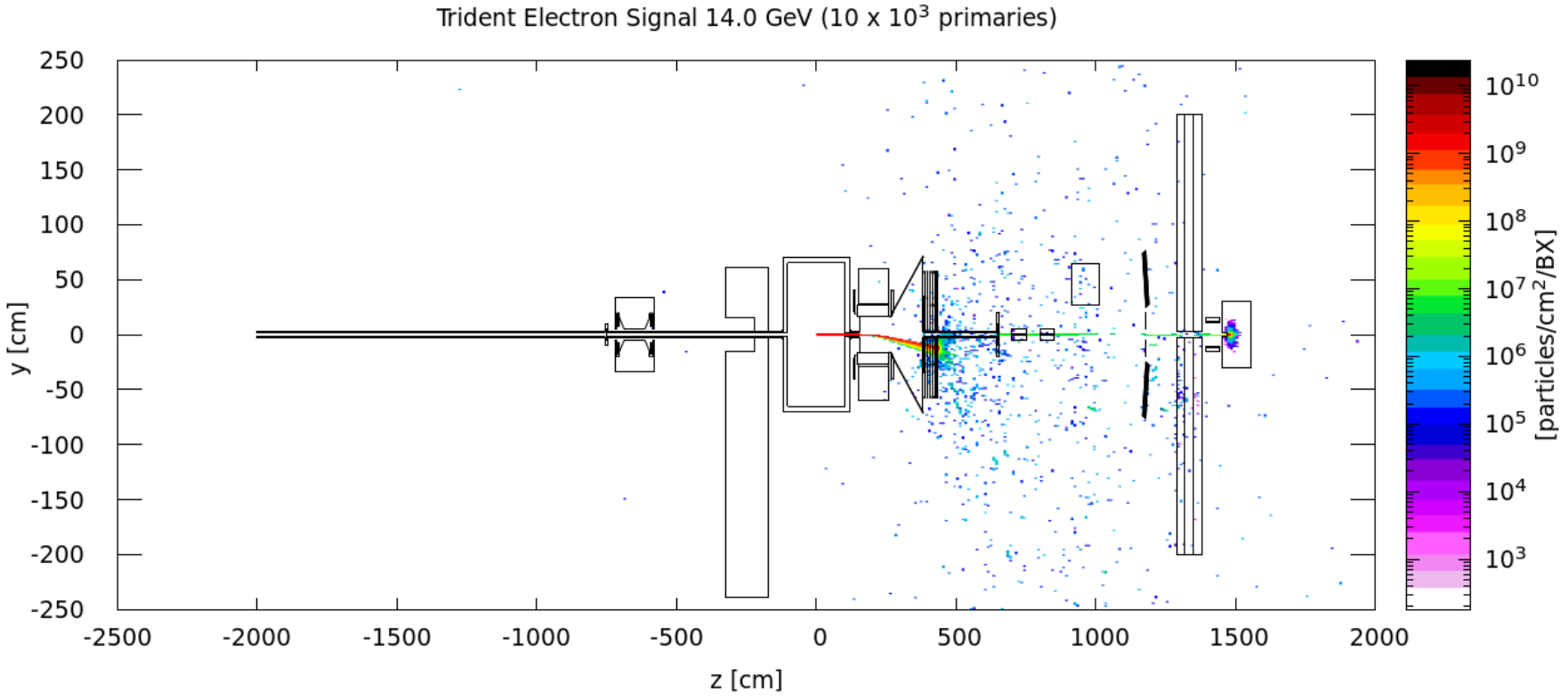
Photon Distribution on Profiler



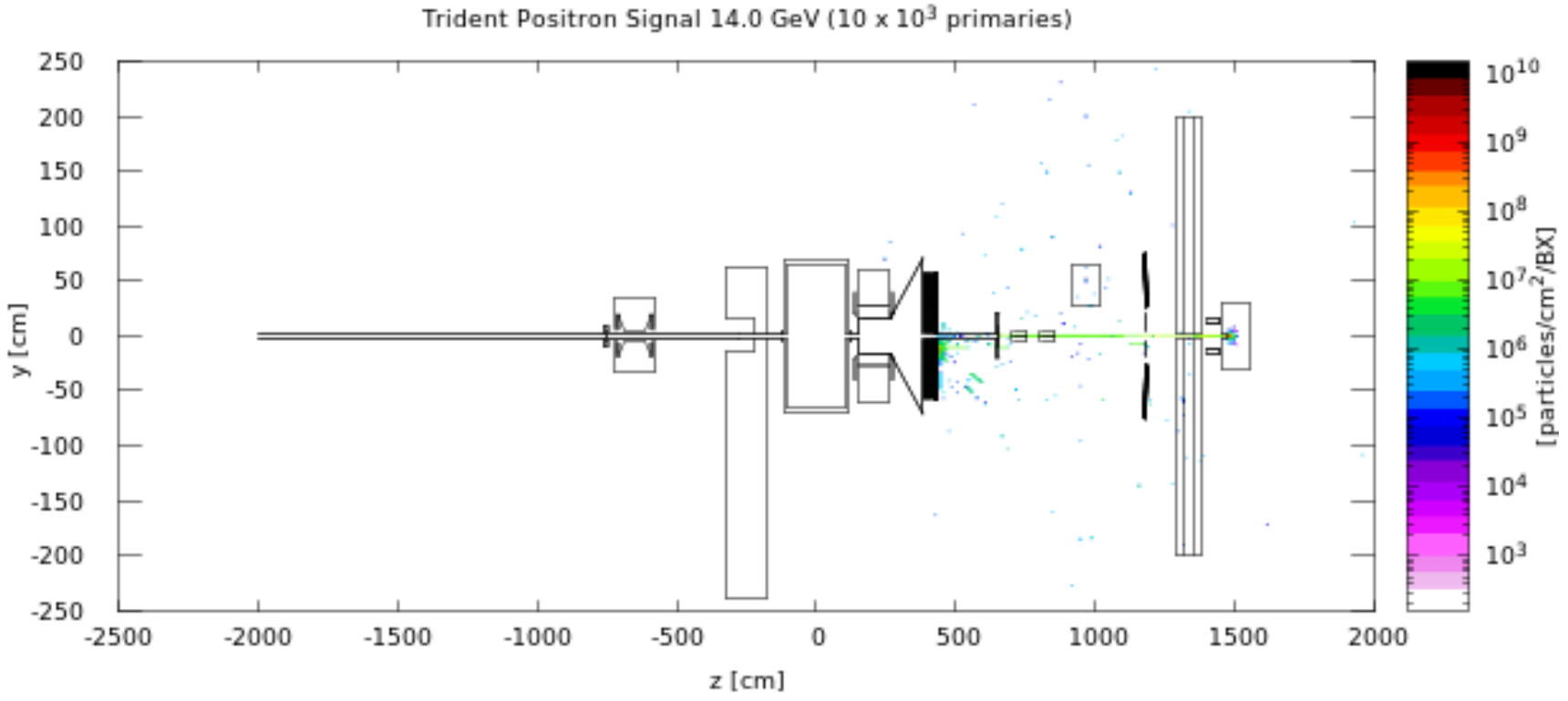
Background Simulations

- Geometry has been converted to flair format and magnetic field before and after IP have been implemented (currently only uniform fields)
- Test run for low number of primaries (10 x 1000), trident 14 GeV case finished
- Test run took ~20 mins, ran on cluster, job spread over 10 nodes

Test Results



Test Results



Test Results