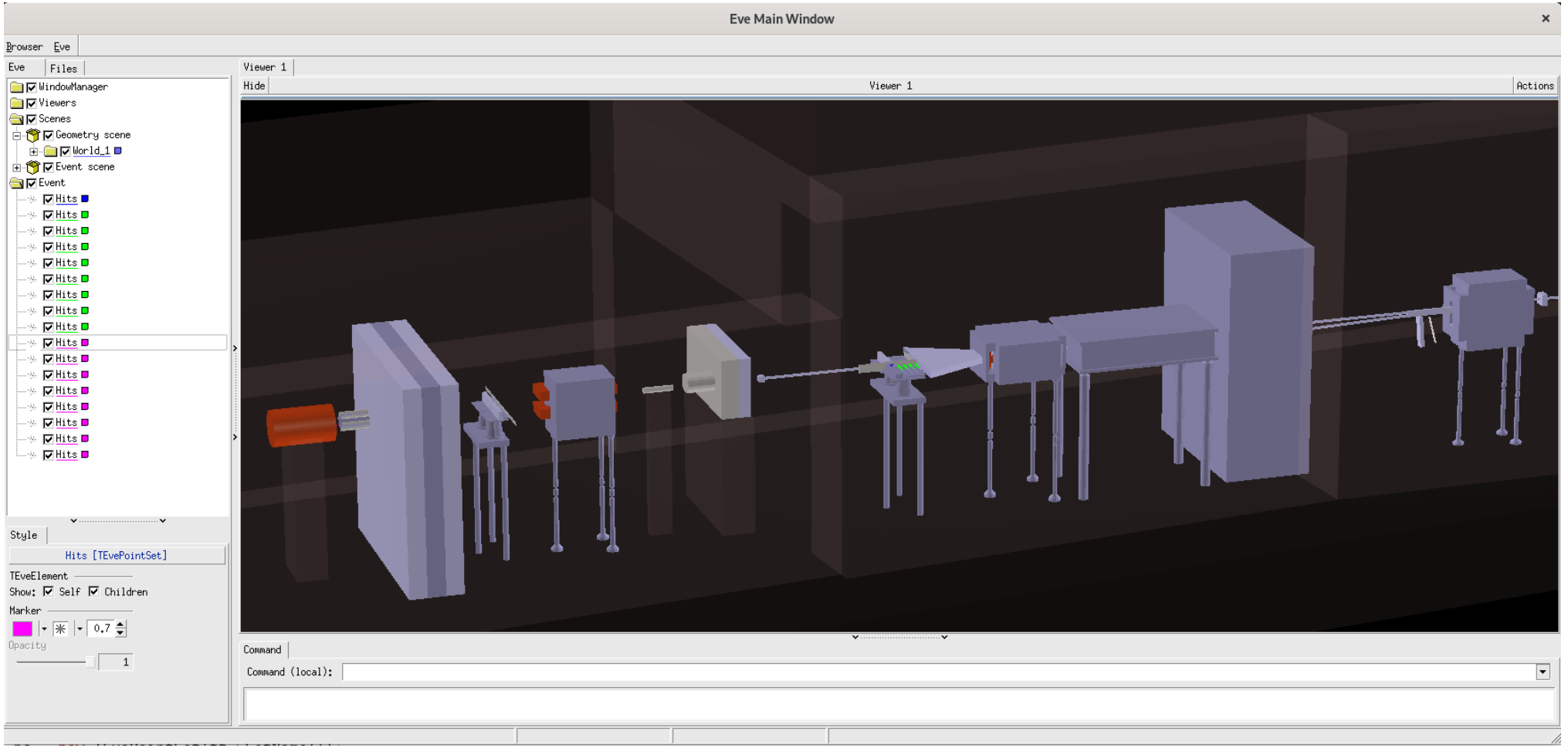
Update on LUXE GEANT4 Simulation.

Oleksandr Borysov

LUXE Technical Meeting
May 26, 2021

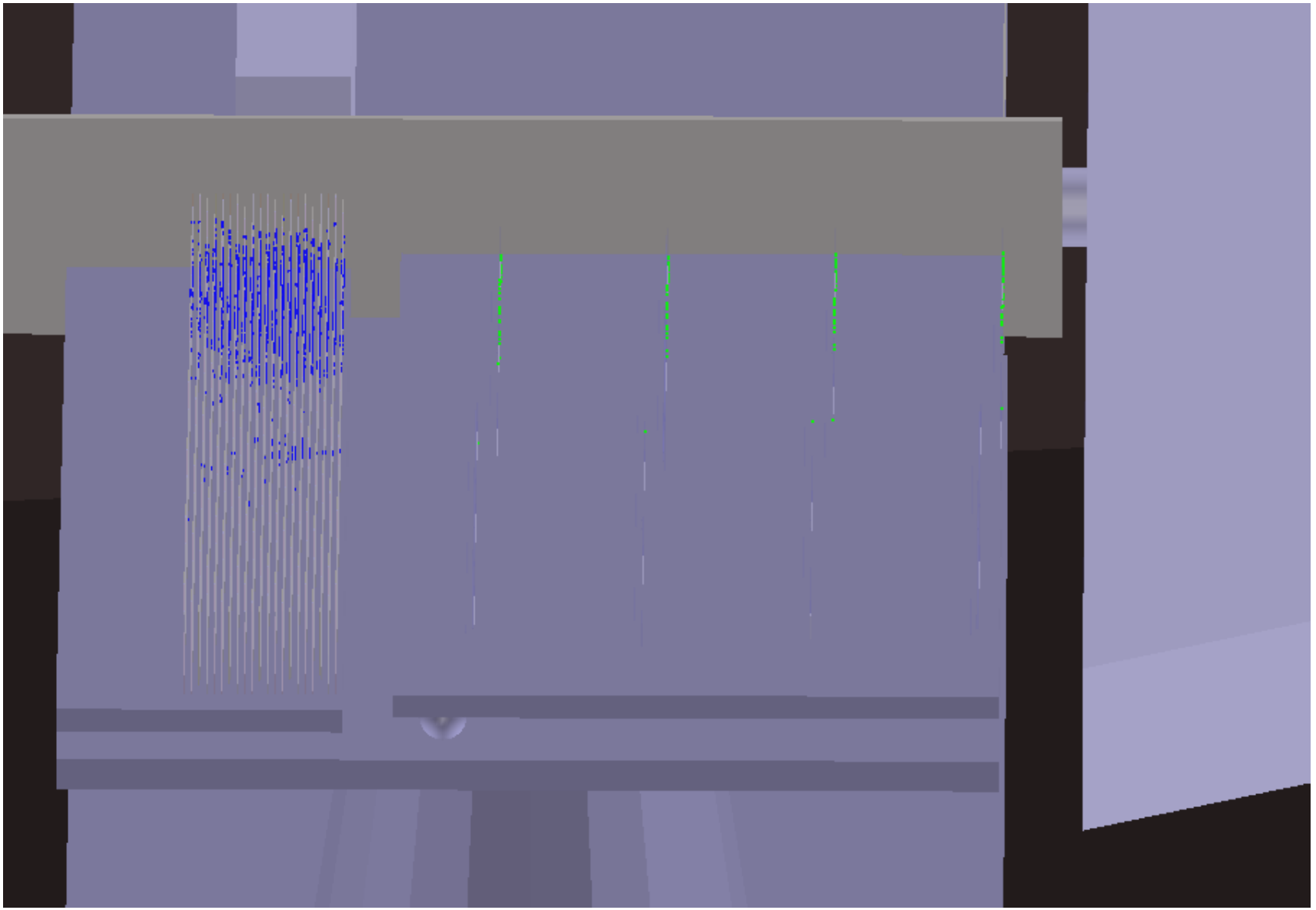
Luxe geometry in event display



Tracker and ECal

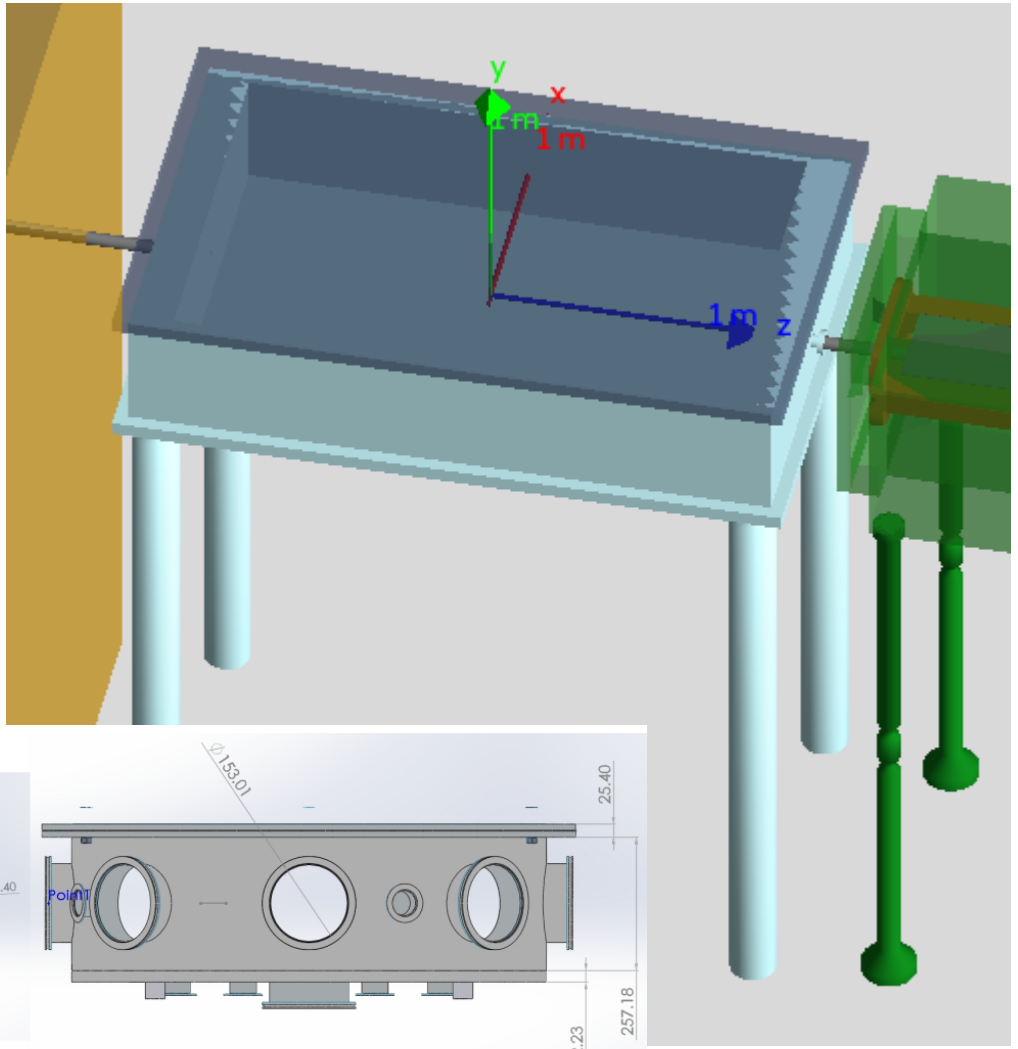
Combined hits of first 2100 events

w0_3000nm_vc_al_window/luxe_hics_signal_165gev_3000nm_jeti40_cv12_em0_alw_1mu_cut_tv4_hv1_1.root

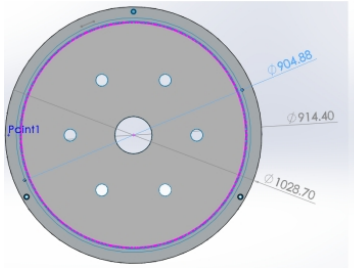


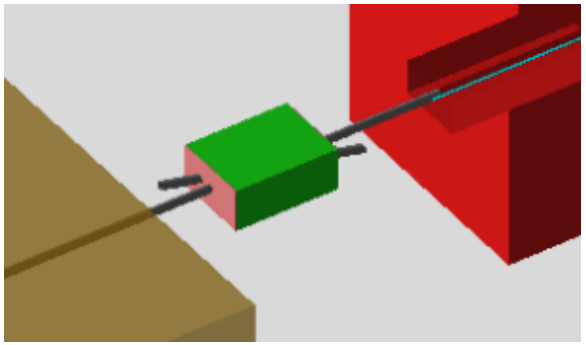
Interaction chamber

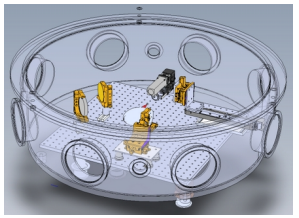
- There were several implementations, 2 based on 3D CAD;
- There is no internal content in G4;
- Calibration wire target can be easily installed (Ishay email);

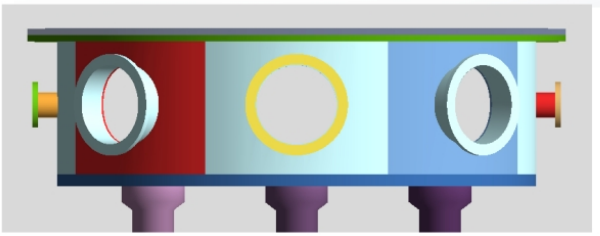


- New design expected;
- internal content;
- Laser pipes;
- Beam pipe interface (colimator?, shielding?);
- Calibration wire target.



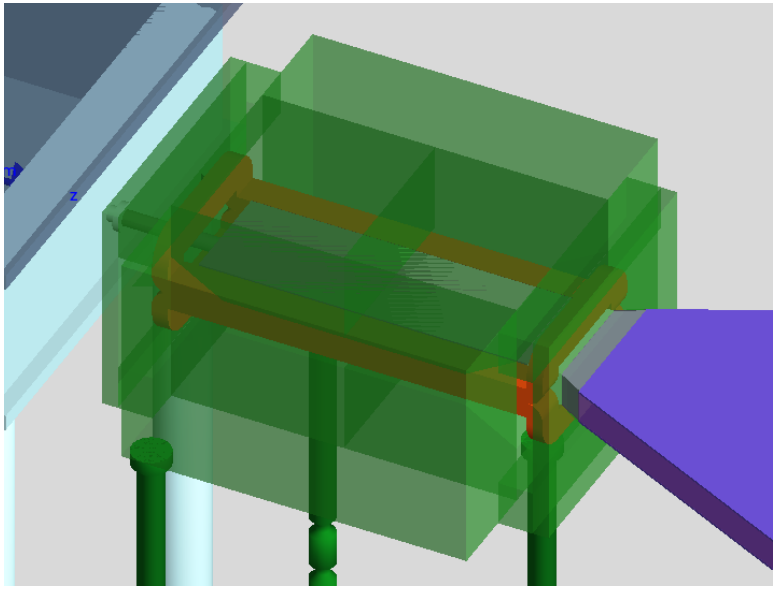


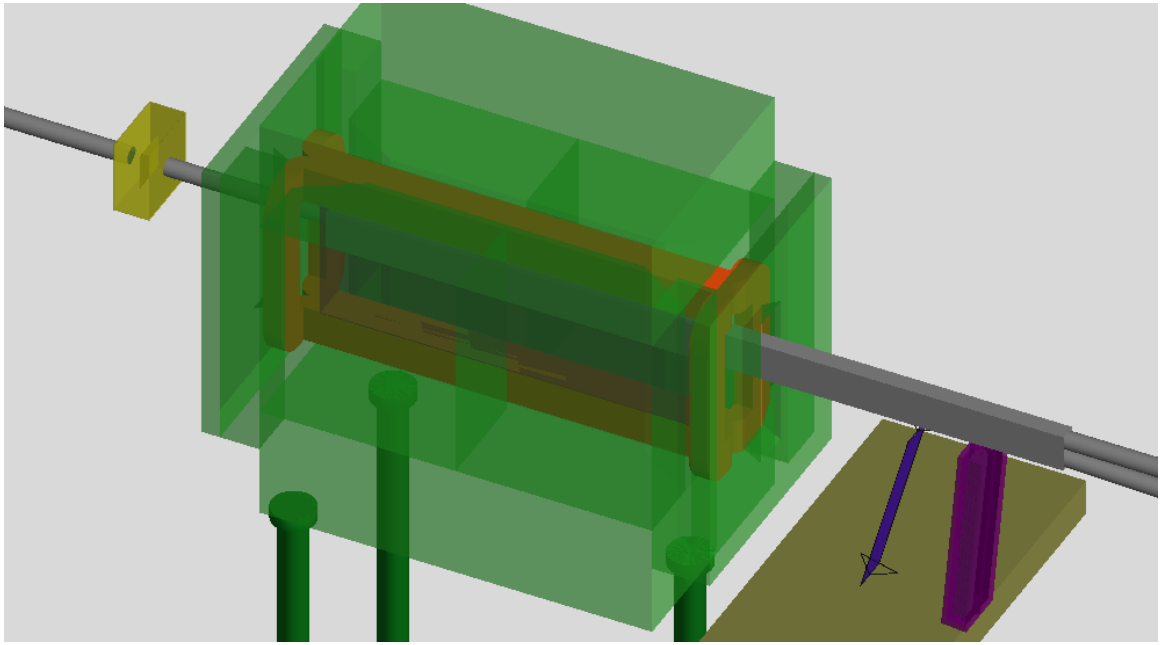




Magnets

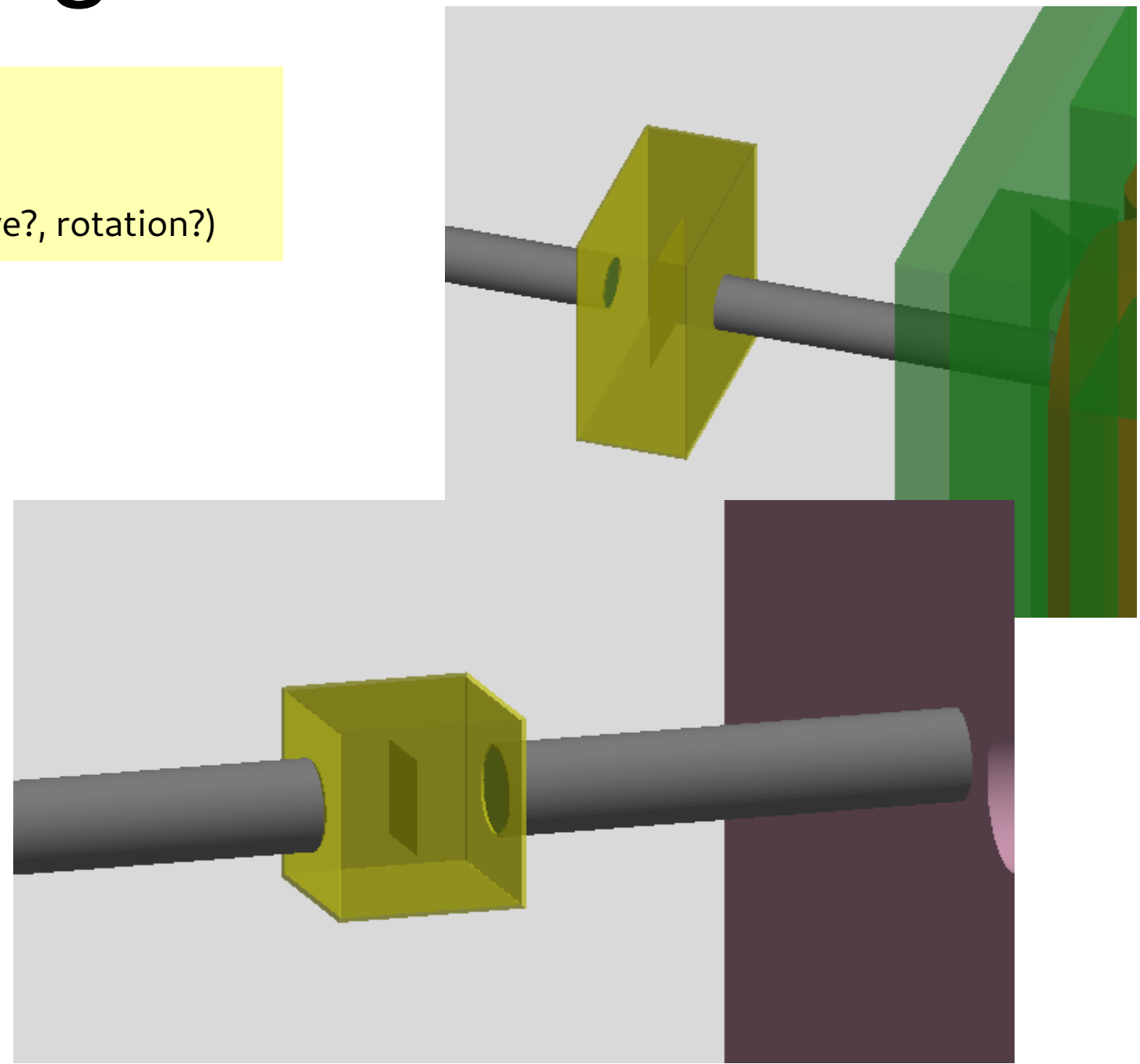
- New magnet model;
- Magnetic field based on measurements or approximation;
- Related hardware:
  - vacuum chambers
  - Beam pipes
  - support





Target containers

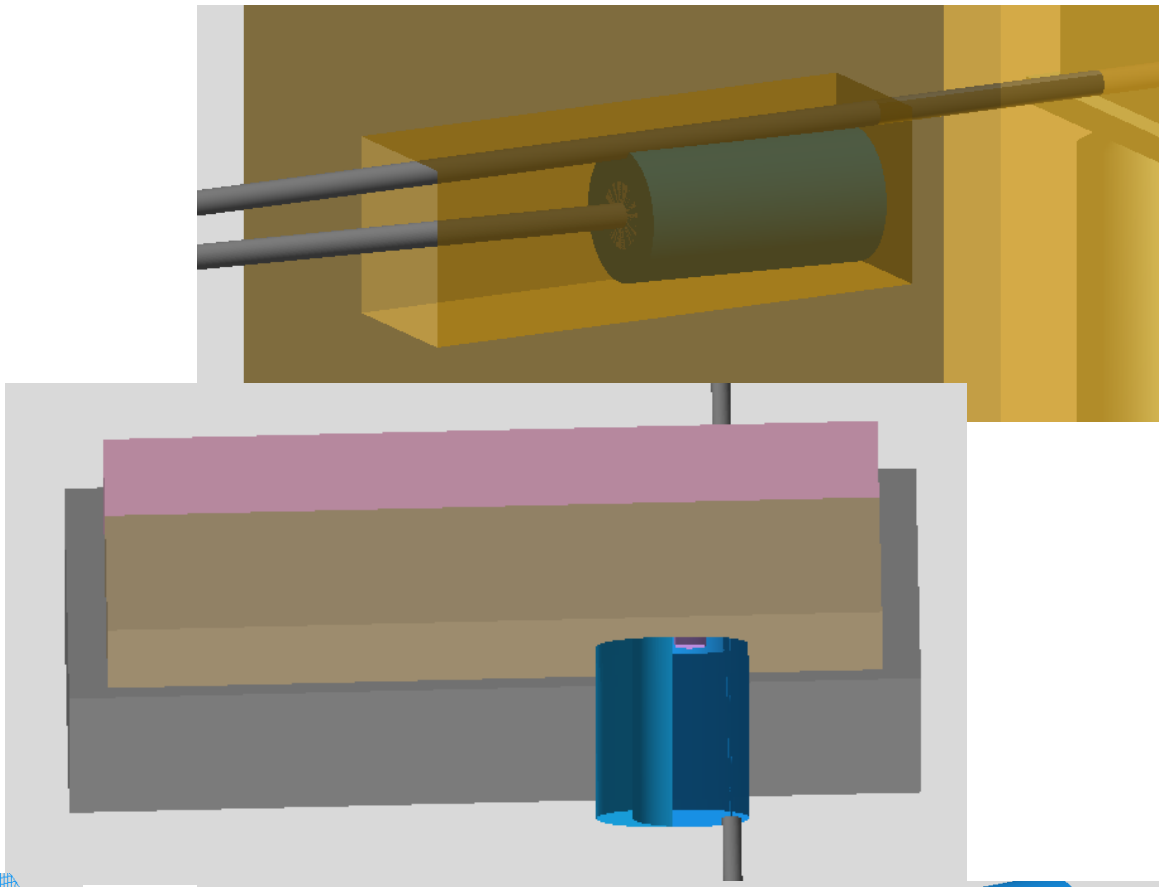
- Container design
- Beam pipe interface
- Target mounting (move?, rotation?)

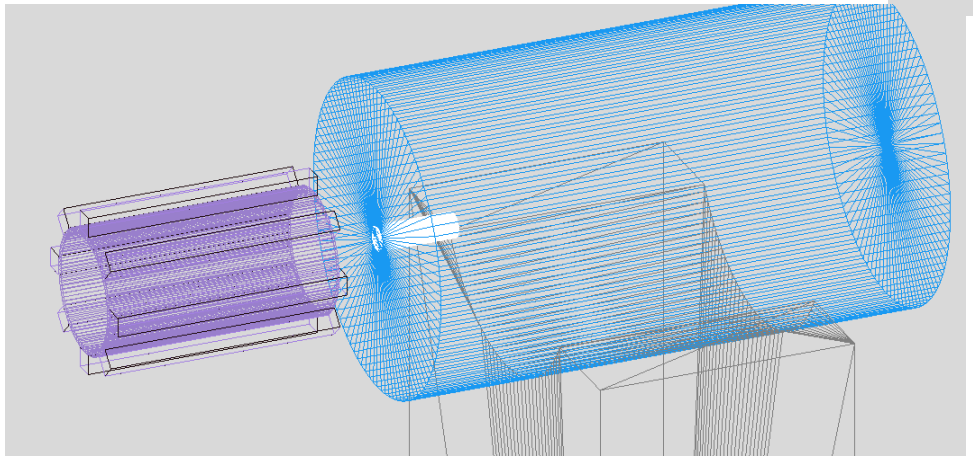


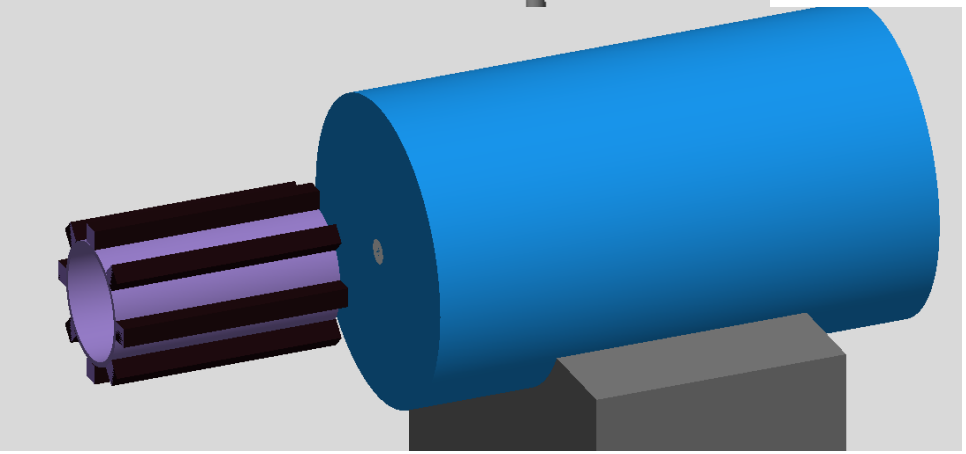
Beam dump

Source of background

- G4 implementation is optimized for detector performance;
- Are there safety requirements to consider?

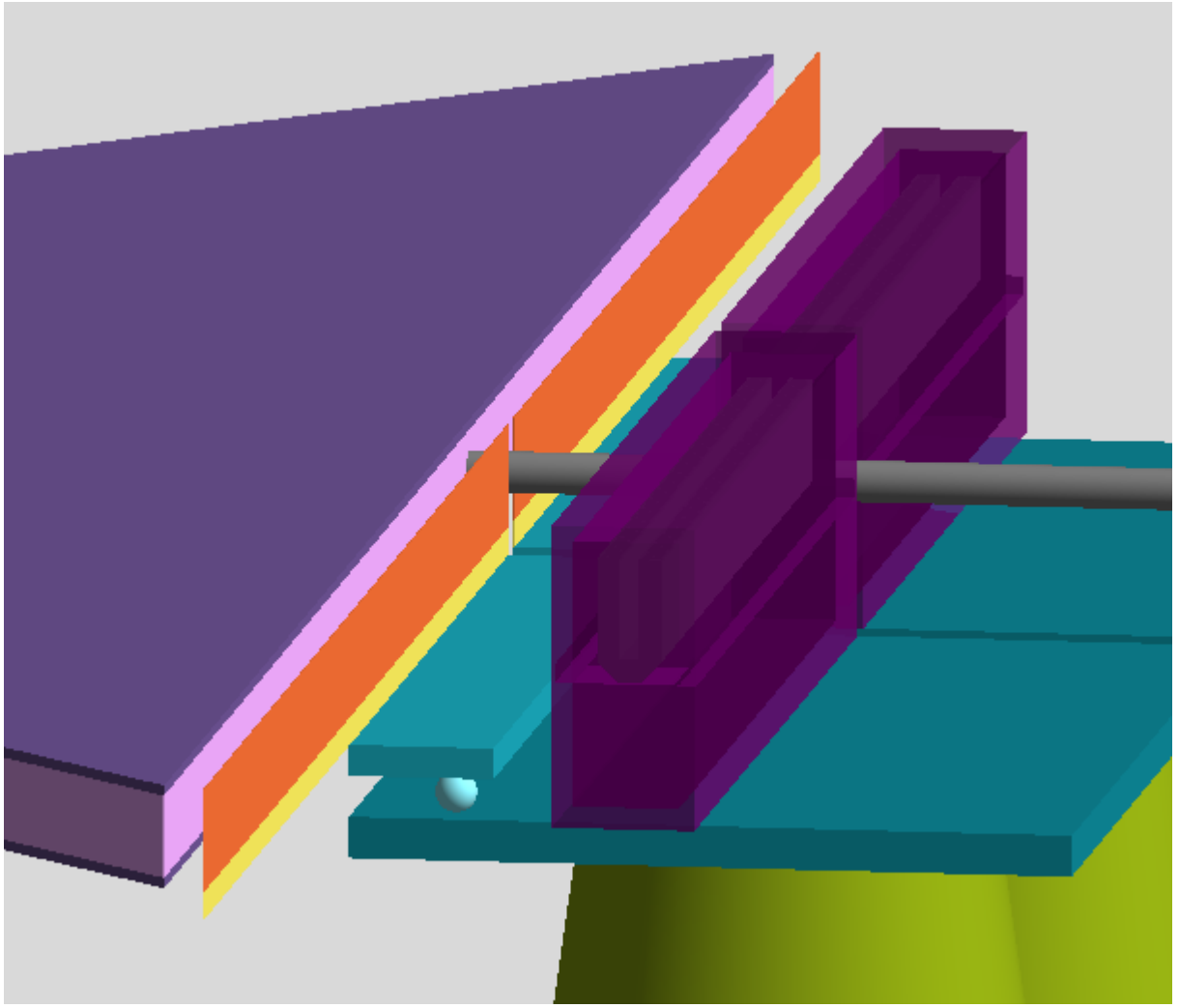






Gamma spectrometer detector

- Exact geometry;
- Supports;
- Camera position;



Cherenkov detector

- Update design
- Signal generation