

EEEMCal simulation updates

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Gap

Geometry adjustment

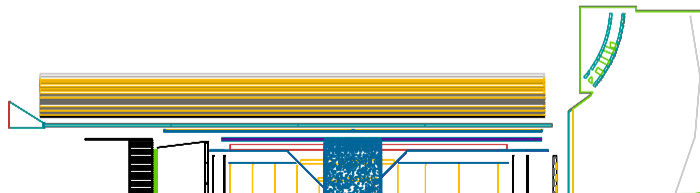
https://github.com/eic/epic/commits/tmp/barrel_interlayers_extension/

Two variants considered

► Nominal:

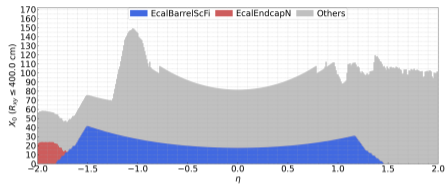


► 15 cm extension:

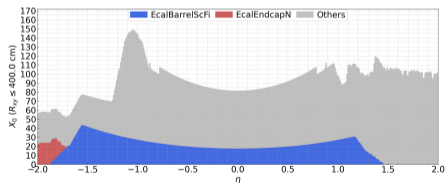


Material scans

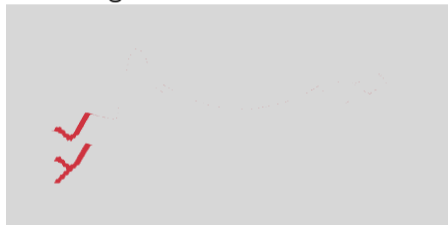
► Nominal:



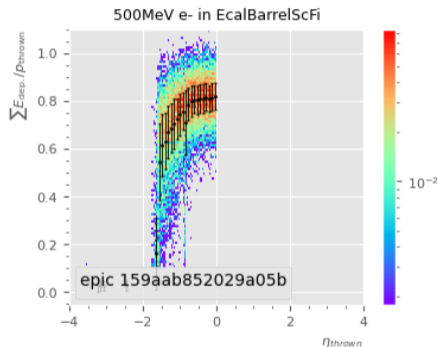
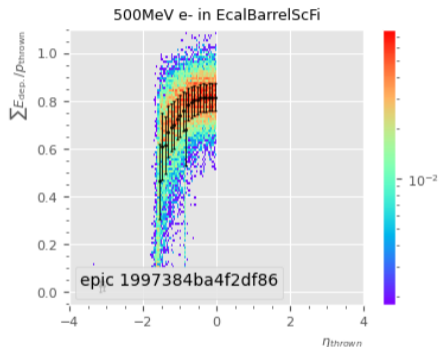
► 15 cm extension:



The image difference

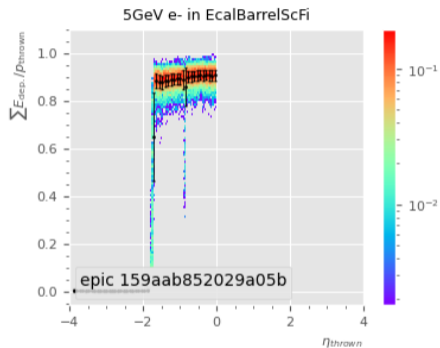
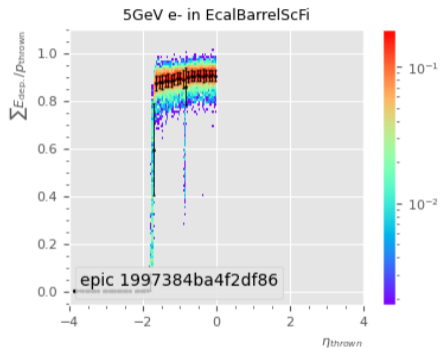


Barrel ScFi energy deposition vs η



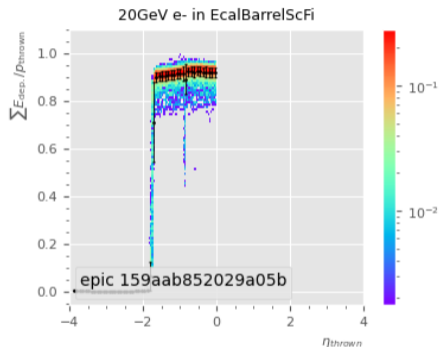
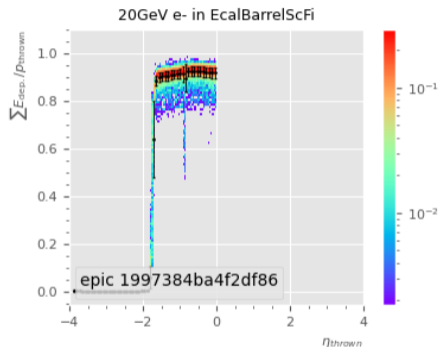
Left: nominal, Right: 15 cm extension

Barrel ScFi energy deposition vs η



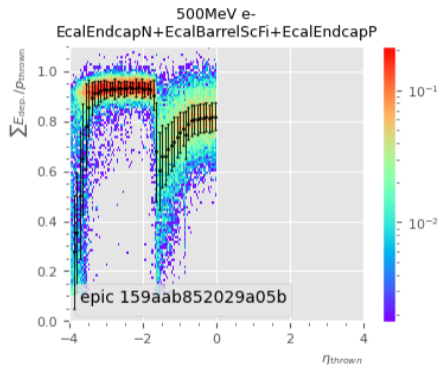
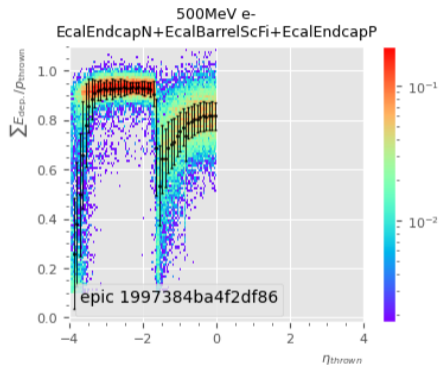
Left: nominal, Right: 15 cm extension

Barrel ScFi energy deposition vs η



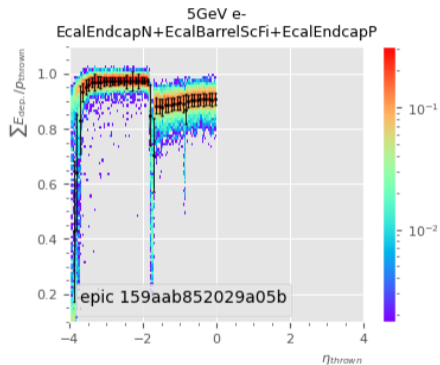
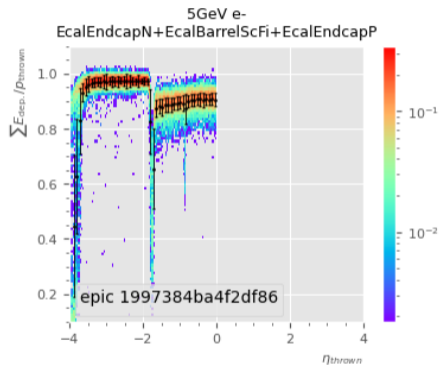
Left: nominal, Right: 15 cm extension

Total energy deposition vs η



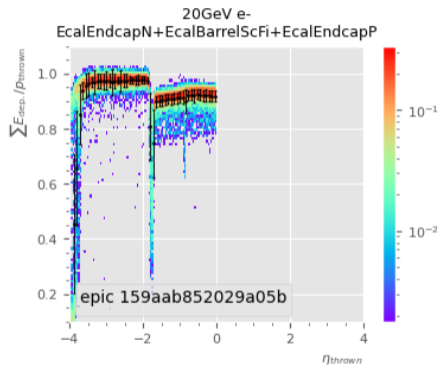
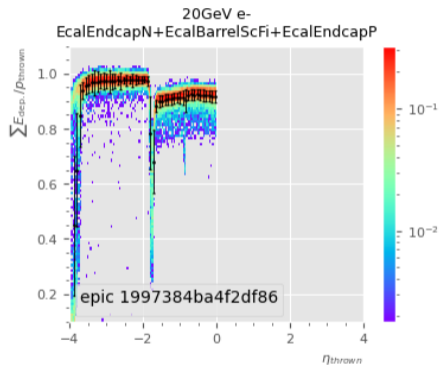
Left: nominal, Right: 15 cm extension

Total energy deposition vs η



Left: nominal, Right: 15 cm extension

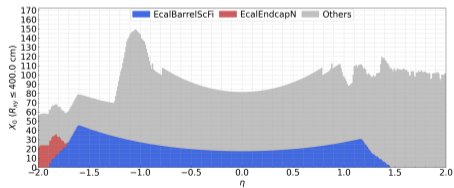
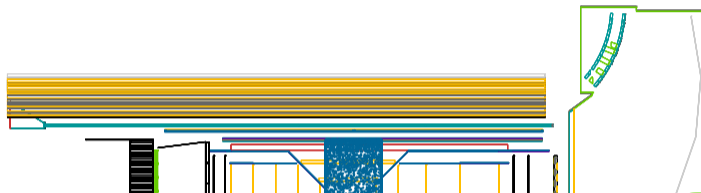
Total energy deposition vs η



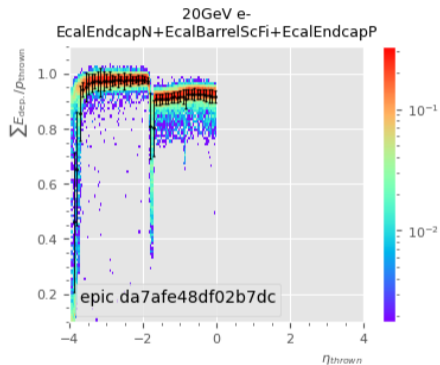
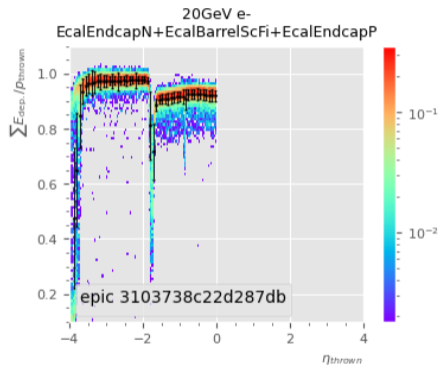
Left: nominal, Right: 15 cm extension

Extending further

45 cm extension would look like this:



Total energy deposition vs η



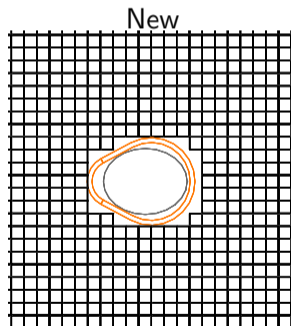
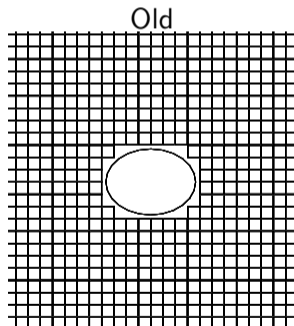
Left: without dirc, Right: 45 cm without dirc

Cell geometry update

Geometry update

<https://github.com/eic/epic/pull/704>

Parameter	Old value	New value
Crystal width	20.0 mm	20.5 mm
Carbon fiber thickness	0.2 mm	0.25 mm
VM2000 wrapper thickness	0.05 mm	0.13 mm
Total module width	20.50 mm	21.26

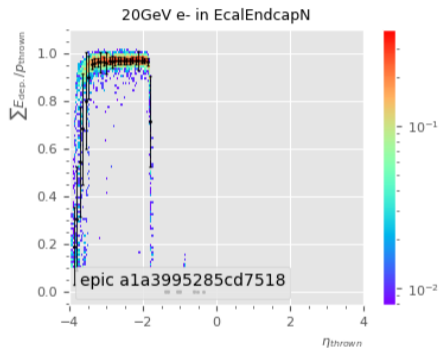
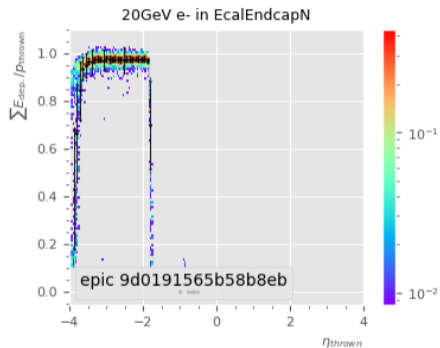


The ellipse is a cutout in the parent volume made to fit the beam pipes.

TODO

- ▶ Fix overlap between collar and a cell
- ▶ Fix extrusion from the envelope
- ▶ Material between cells and collar
 - For now switched parent volume from StainlessSteel to Vacuum – this loses some of the outer support material
- ▶ Check fit at the edges (compare against the CAD design)
- ▶ Estimate impact on performance
 - ▶ Sizes change
 - ▶ Rapidity acceptance change

Impact on performance



Left: old, Right: new