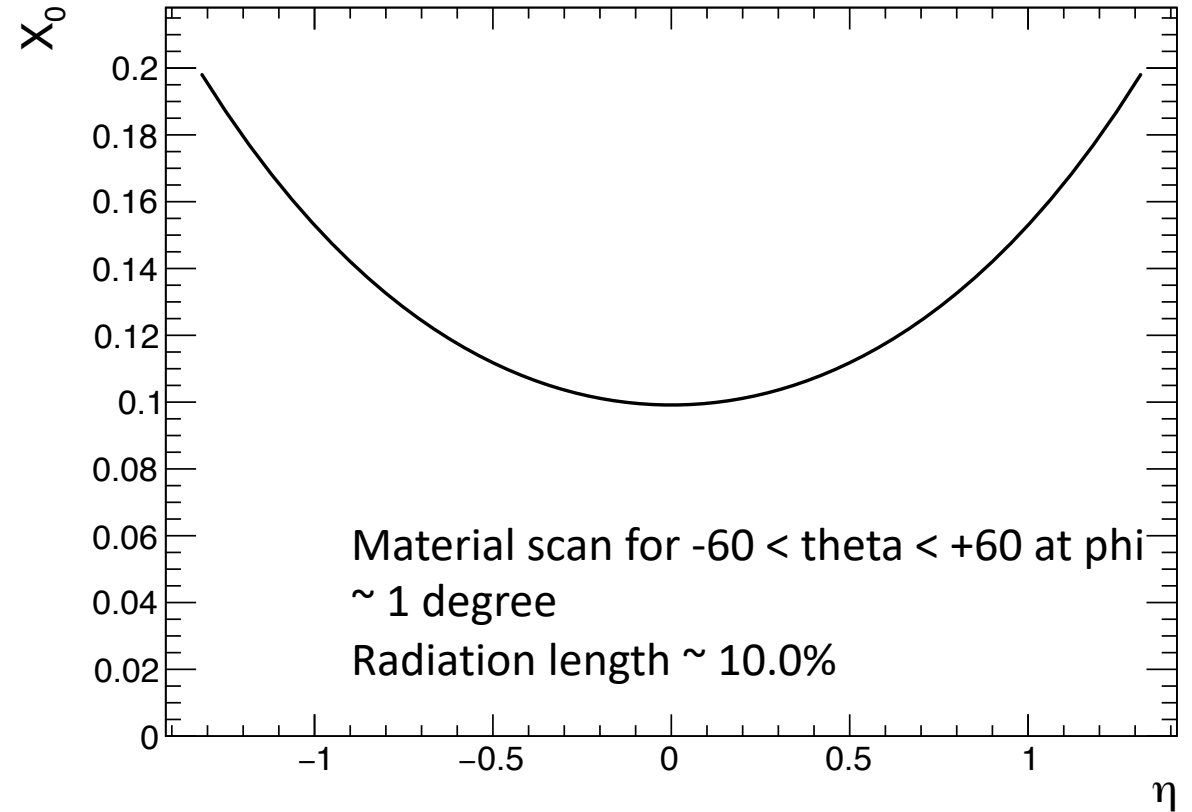
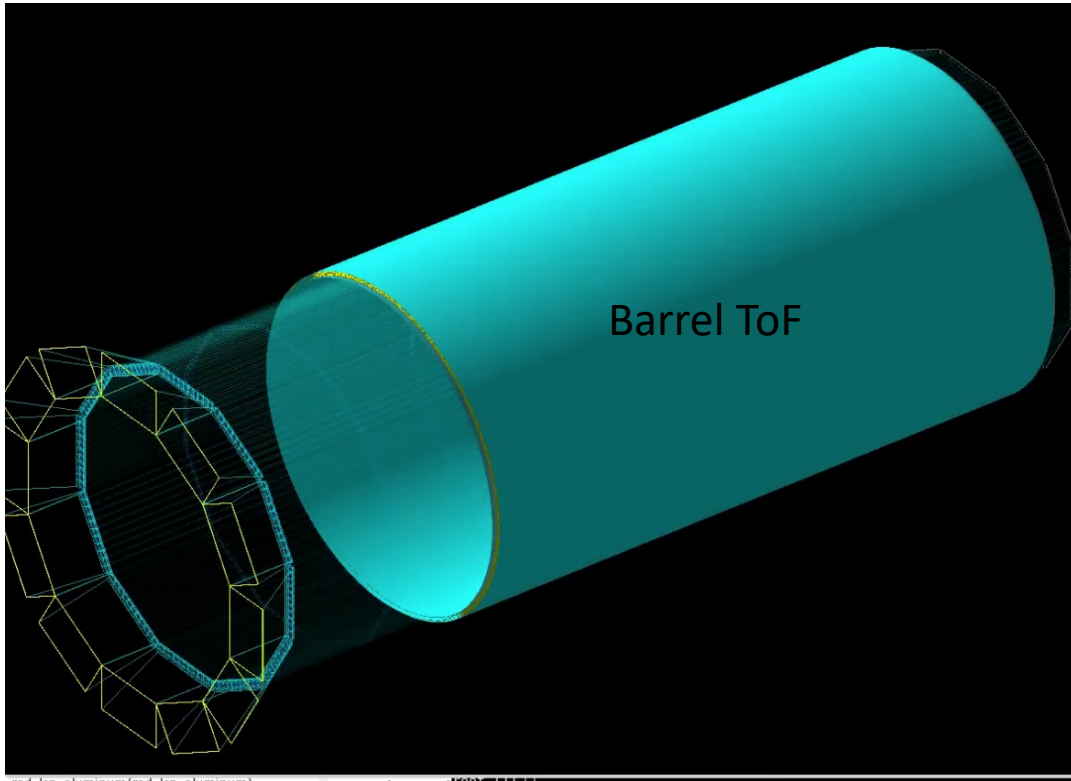


ECCE barrel MRPC geometry

Geometry parameters



- Barrel mRPC ToF placed at $R = 82$ cm
- Uniform cylindrical geometry with relevant number of active gas layers and mRPC layers.
- Almost all the material budget accounted for.
- Not included in the geometry staggered arrangement . Currently the total width along R is ~ 2.8 cm but in real scenario under staggered arrangement it will be about 5.6 cm.
- Opened pull request <https://github.com/ECCE-EIC/macros/pull/76>

Tracking performance with and w/o mRPC ToF

Studies done with tracking evaluator

- Subsystems in both configurations (with and without mRPC ToF) :

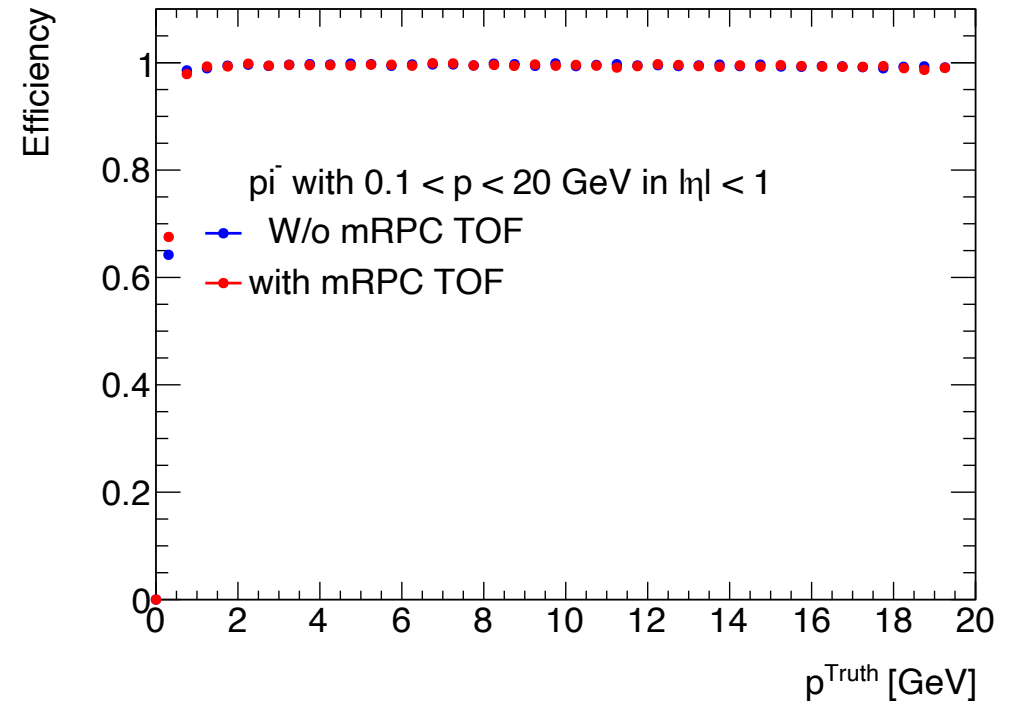
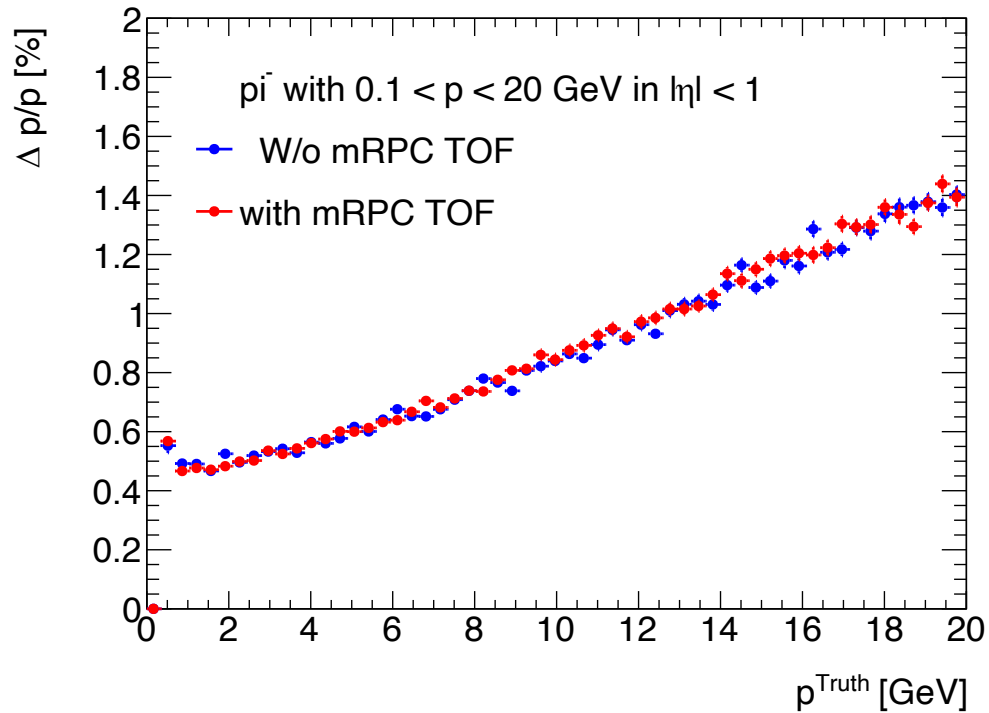
Si + mRwell (@ R =44, 46, 80 cm) + DIRC + iHCAL

- Generated particle phase space

5 pions per event with $0.1 < p < 20$ GeV , $|\eta| < 1$ and $0 < \phi < 2\pi$

- mRwell phi and z resolution is 75 um in this study. mRPC ToF phi and z resolution is taken as 5 mm.

- More detailed tracking performance for different locations of barrel MPGD trackers can be found at <https://indico.bnl.gov/event/12862/>



Effect of mRPC ToF on barrel EMCAL

- Subsystems in both configurations (with and without mRPC ToF)
Si + mRwell (@ R = 44, 46, 80 cm) + DIRC + Barrel EMCAL
- 5 e- per event with $p_T = 2$ GeV in $|\eta| < 1$.
- Used projected momentum information from tracking evaluator output

