UNIVERSITY OF BIRMINGHAM | SCHOOL OF PHYSICS AND ASTRONOMY

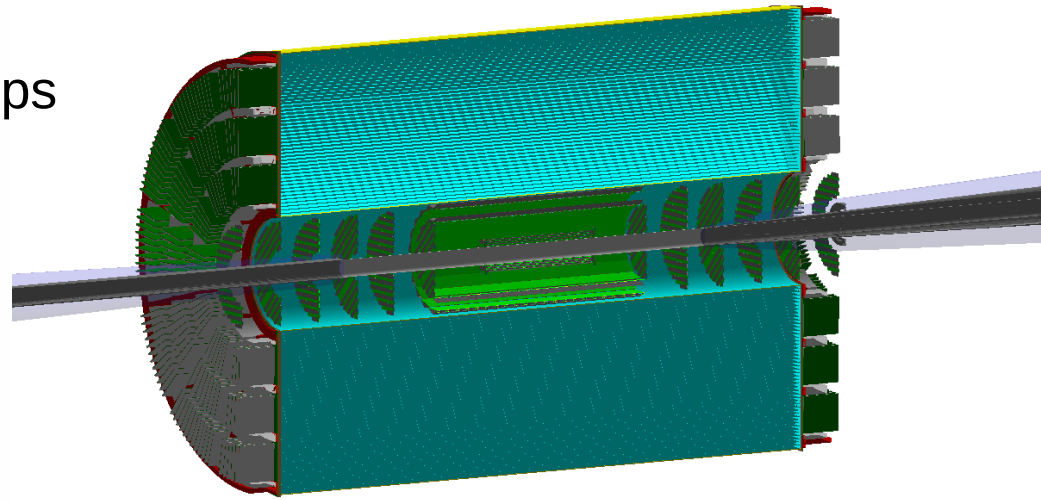
University of Birmingham simulations update

P.P. Allport, L. Gonella, P. Ilten, P.G. Jones, P.R. Newman, S. Maple, H. Wennlöf (h.wennlof@cern.ch)

24th of September 2020

Hybrid baseline update

- Agreed to use current Fun4All EIC TPC implementation as baseline
- Have added Jin's endcaps as well
- Work ongoing in gaseous groups to port EICROOT GEMs to Fun4All



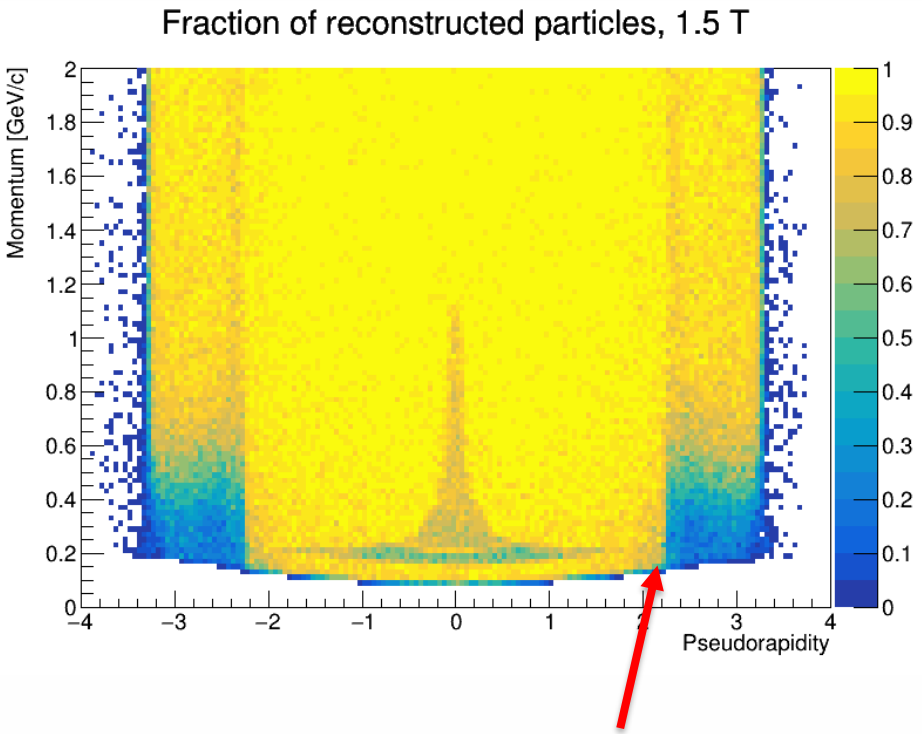
Initial study of low-momentum limit

- Investigating pion and kaon low-momentum limit with the baseline TPC hybrid tracker
- Sending single pions and kaons in pseudorapidity interval $-4 \leq \eta \leq -4$
- Goal: determine which fraction of events can be reconstructed
  - Using Kalman filter reconstruction
- The idea is to do this in bins of pseudorapidity of size 0.5
  - This works, I can project and get curves for each interval

- There are some issues, however;

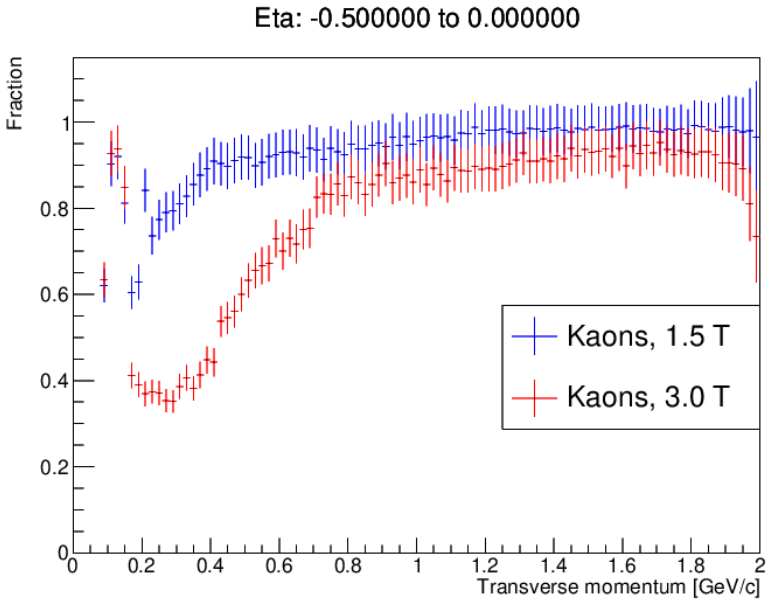
A few issues

- I generated flat distributions in p, rather than p_T
  - Will try to amend this for the next run
- A “structure” appears in central regions, indicating that reconstruction struggles more there
  - Trying to understand why; ideas much appreciated
  - Material scan shows nothing in particular in that region
  - Region grows when going to 3 T



A few issues

- Shown again as a profile at central pseudorapidity here:



Fraction of reconstructed particles

- Profiles for higher pseudorapidities look more like I expect