EPD Vertex Determination for π^0 A_N

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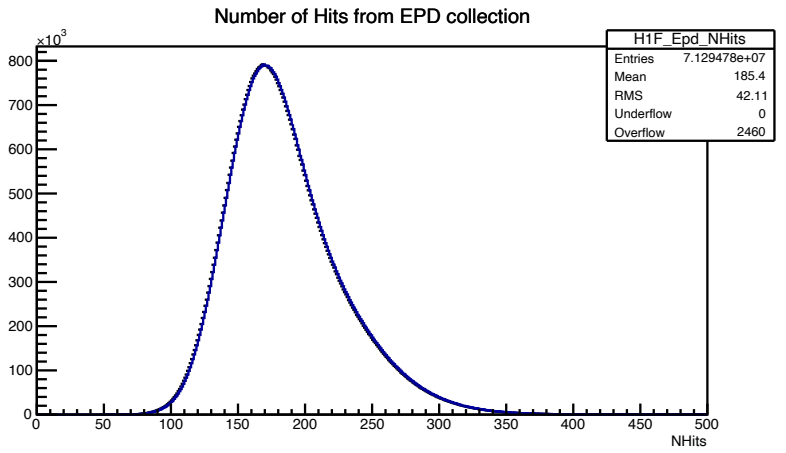
Spin PWG Meeting

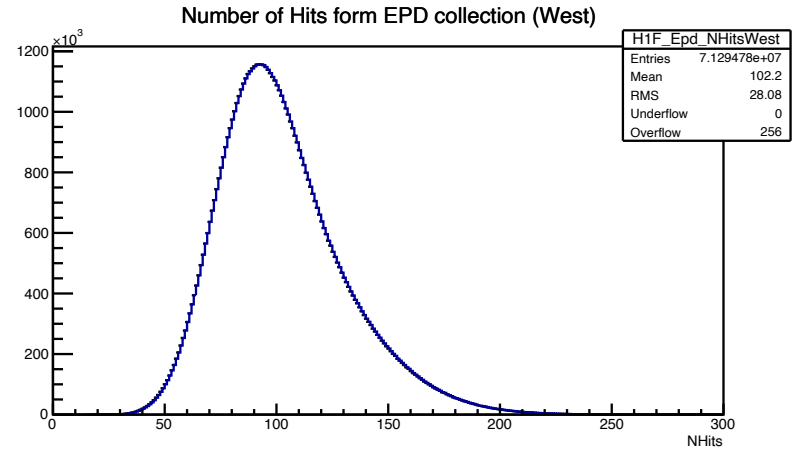
Recap

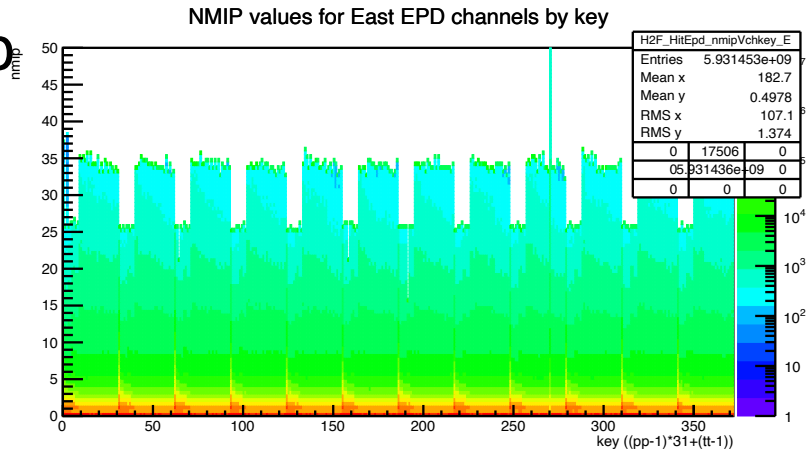
- Doing QA for Run 22 fwd_stream production
- Request page: https://drupal.star.bnl.gov/STAR/blog/dkap7827/Run-22-Data-Production-Request
- Last update showed missing EPD and VPD data
  - Options “btof” and “epdHit” added after run 23050001 to fill missing info
- Question: Is it possible to get EPD data from MuDst trigger data and how does the EPD vertex look?
- Data used is first 5k files from production

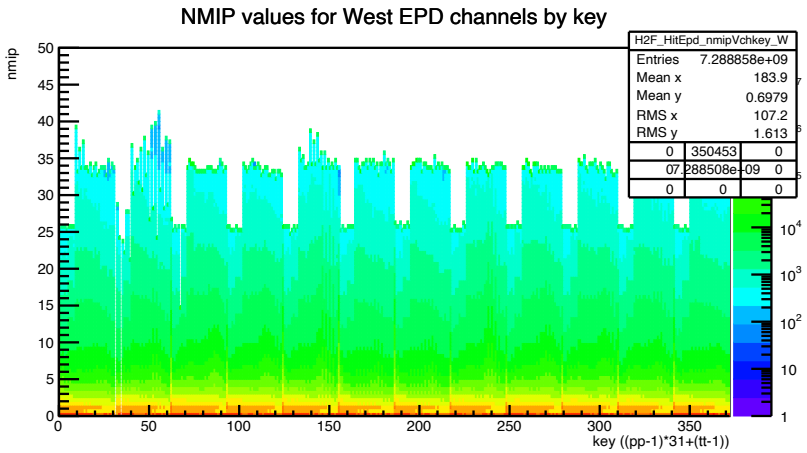
Is EPD information in Trigger Data?

- Yes, but no code existed to extract this information
- Modified StEpdHitMaker to also read MuDst trigger data and fill StEvent with StEpdHit
- Waiting to share changes and results with EPD group
  - Got some useful advice from Rosi and Mike
- Multiplicity and ADC nMip shown on the right.
  - Data looks normal





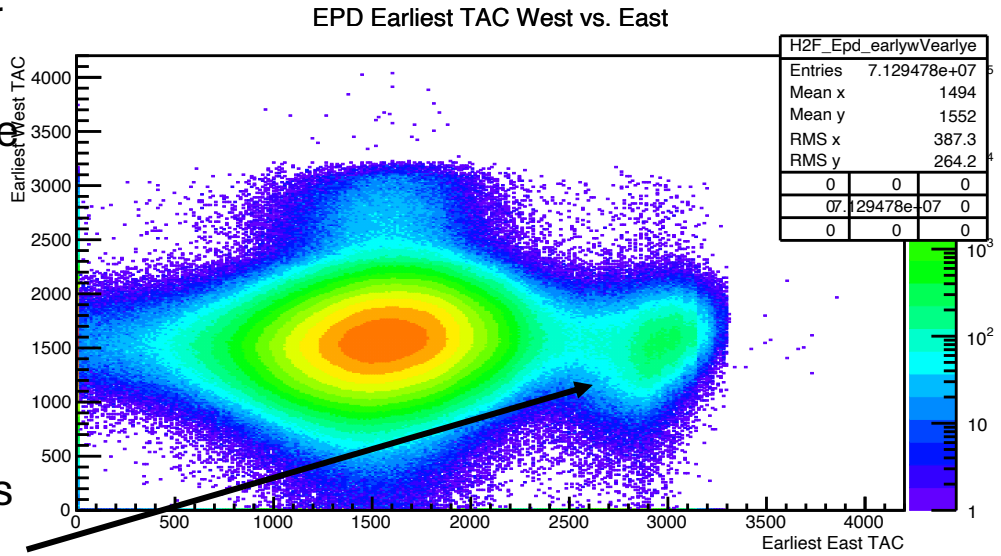


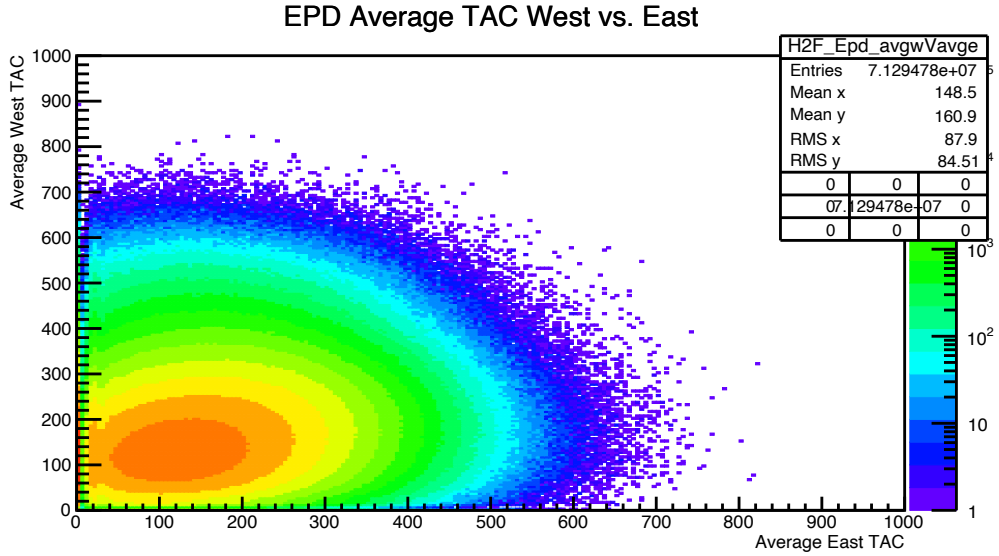


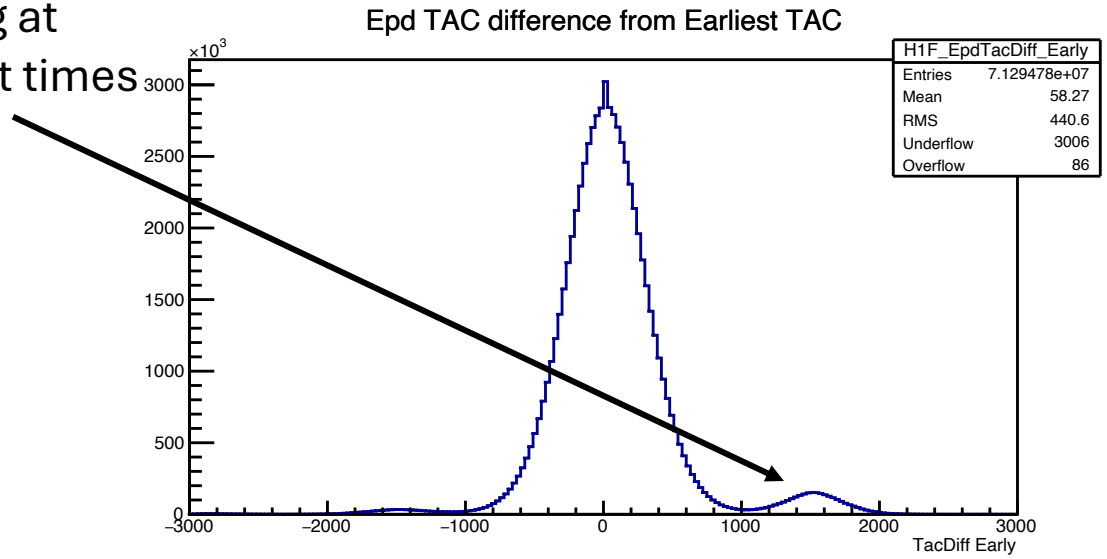
EPD TAC QA

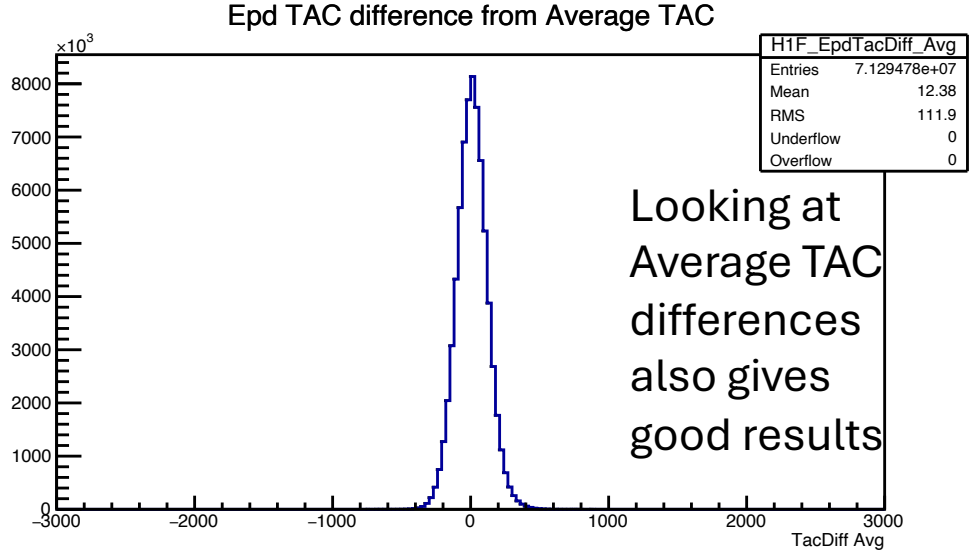
Overall nice clean center where collisions are happening

Blue beam backgrounds seen when looking at earliest times







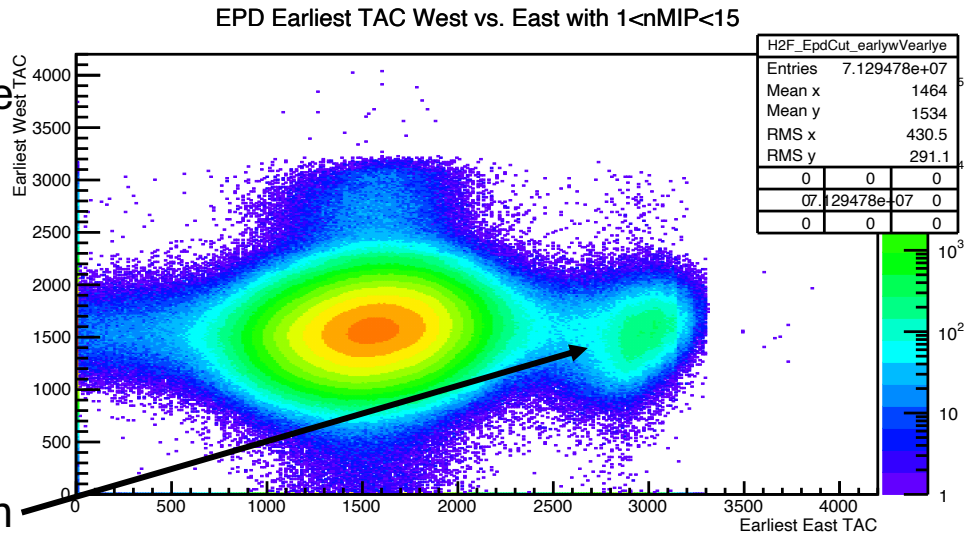


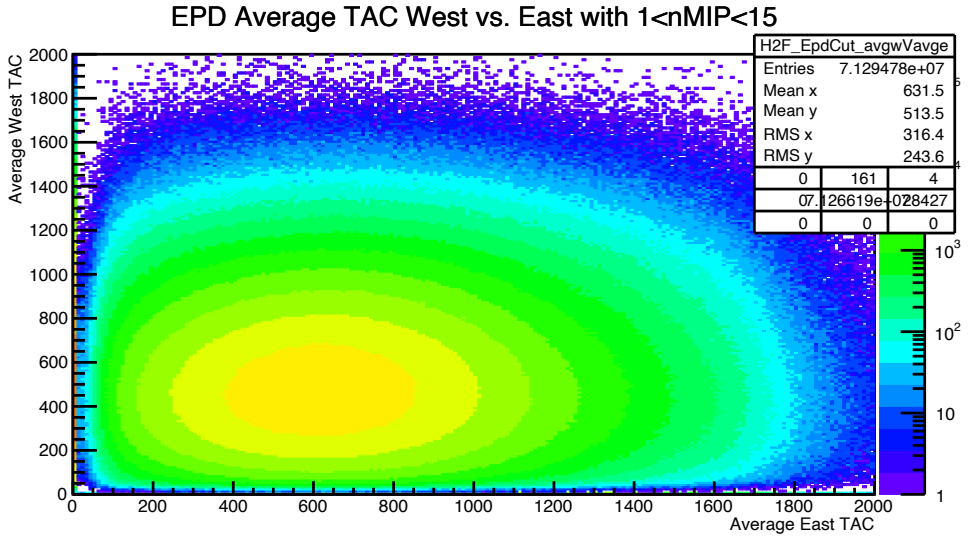
Looking at Average TAC differences also gives good results

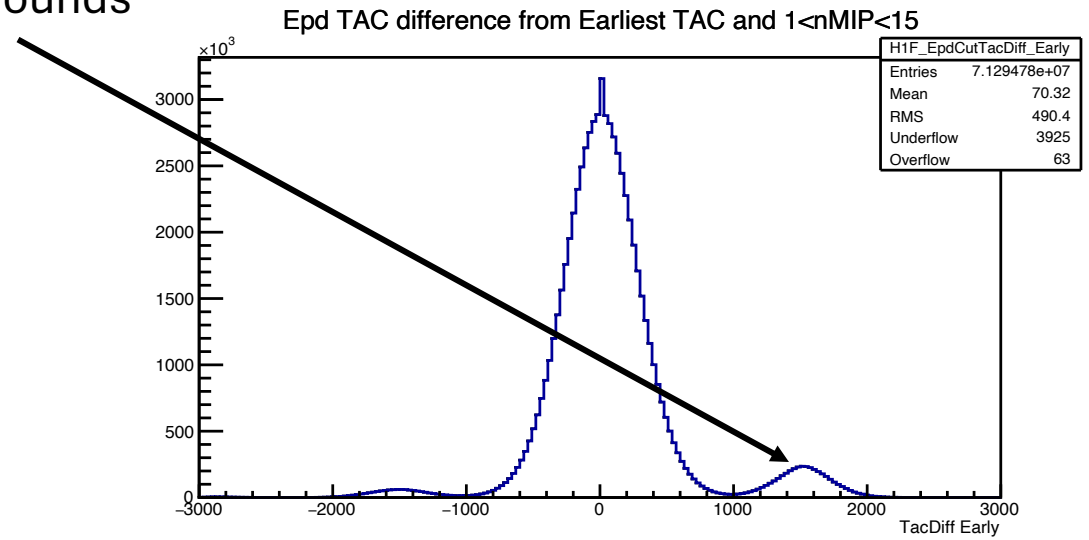
EPD TAC nMIP Cut

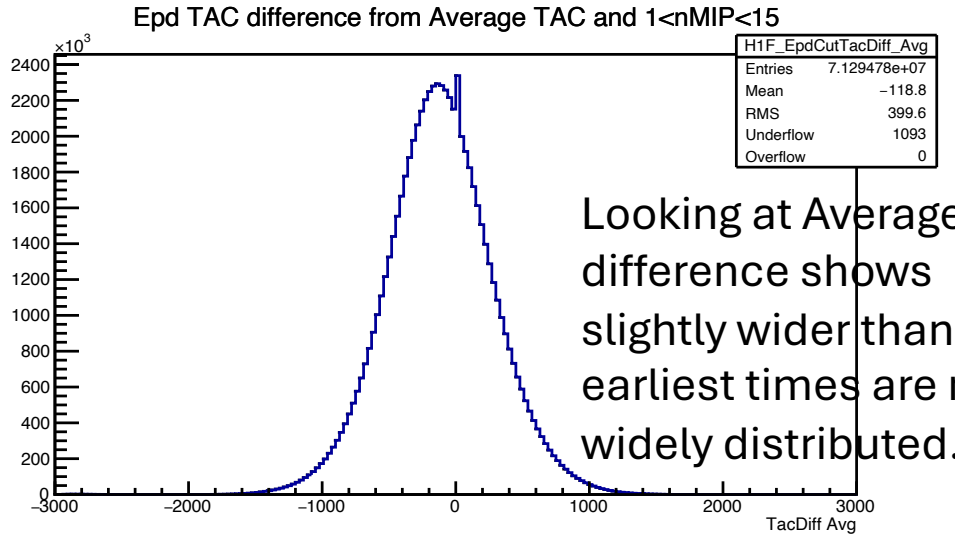
Still see nice clean center where collisions are happening

nMIP cut doesn't reduce beam backgrounds



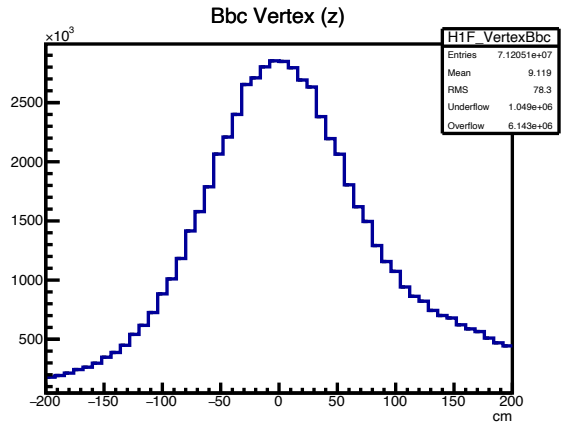


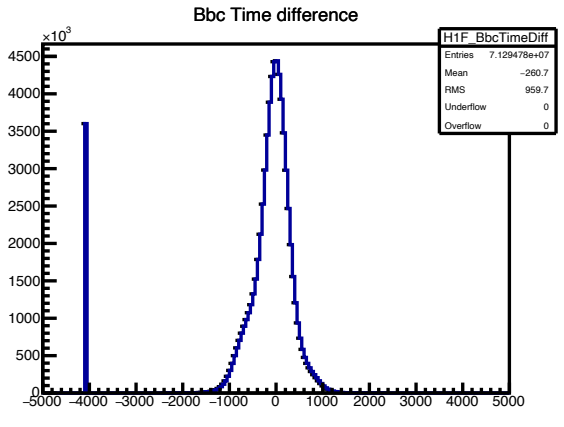


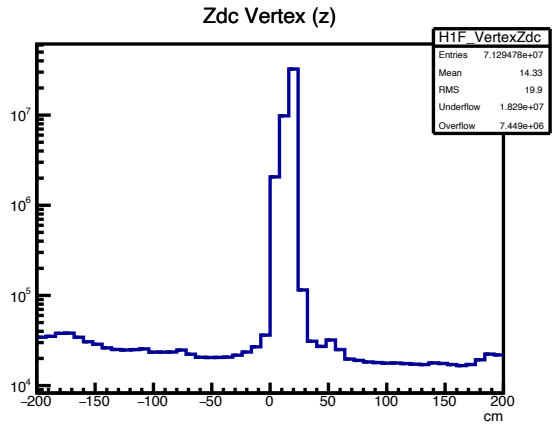


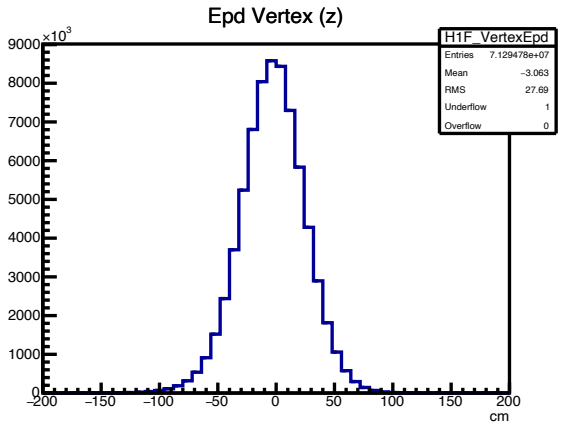
Looking at Average TAC difference shows slightly wider than earliest times are more widely distributed.

Vertex distribution









- EPD vertex using the average TAC difference with no cut gives a better resolution than BBC
- Need to confirm with EPD group that I am using right scale factor

Conclusions

- Implemented code to read EPD data from trigger data in Mudst stream
- Reconstructing vertex with EPD looks promising
  - Initial findings show resolution looks better than BBC
- Can see clear blue beam backgrounds in the earliest TAC distributions