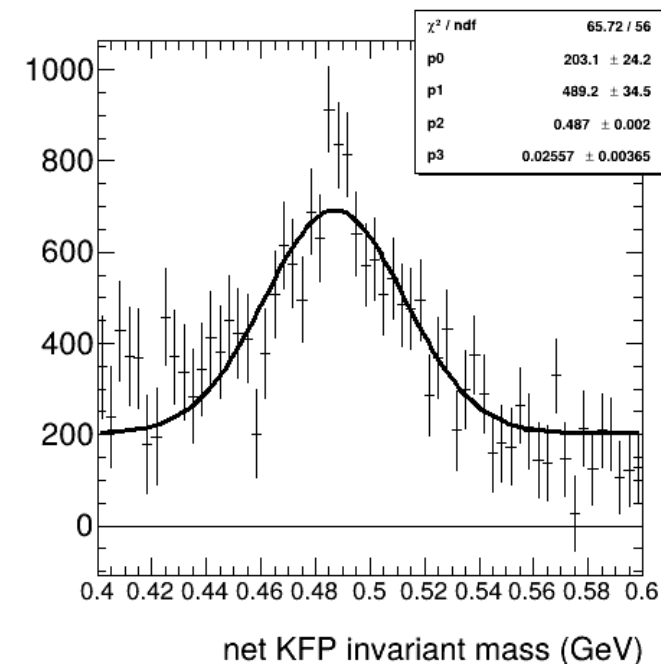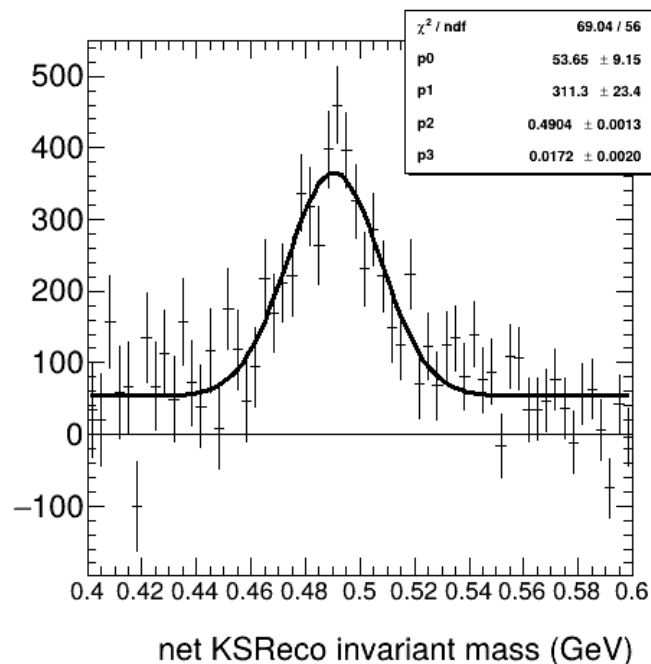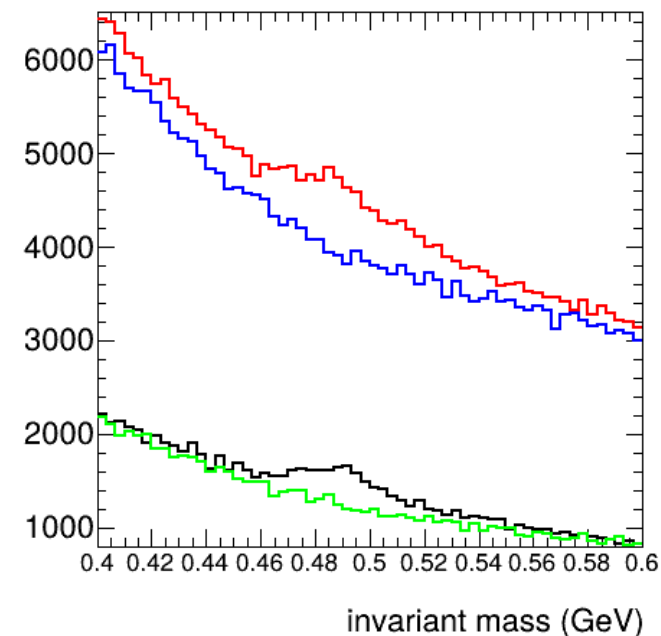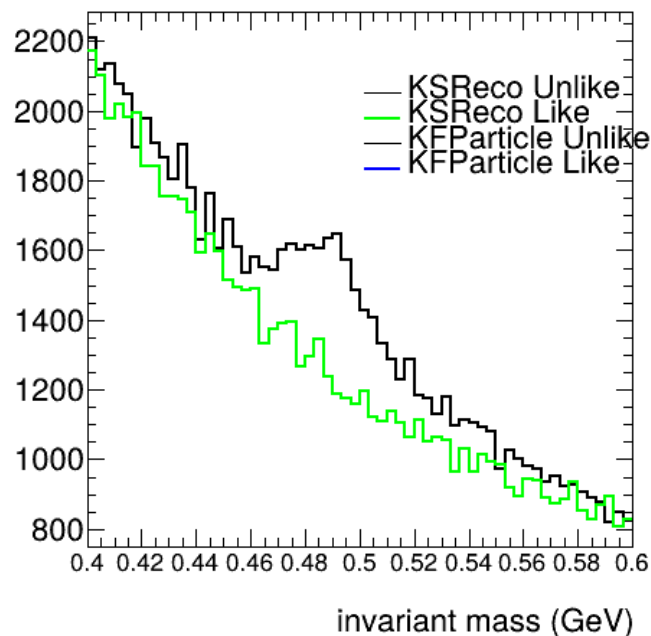# K_Short Update

Alex Patton – January 31, 2025

Using KShortReco's track map

- Now have KFParticle only use the tracks selected by KShortReco

- When we do this, we can see that KFParticle does indeed have a peak that only appears in unlike sign.

- This has a higher number of candidates and "yield" than KShortReco, which is confusing given that it is using the same tracks.

- Cuts: same crossing, both track pT > 0.2

- DIRA > 0.88,

- pair DCA of tracks < 0.5

- pathlength^2 > 0.2

invariant mass (GeV)

invariant mass (GeV)

net KSReco invariant mass (GeV)


net KFP invariant mass (GeV)

Using KFParticle's tracks

- Used feature in KFParticle to output all the tracks it selects to a trackMap, to look at how KShortReconstruction functions if it uses those tracks. Original on left, using KFParticle's track map on the right
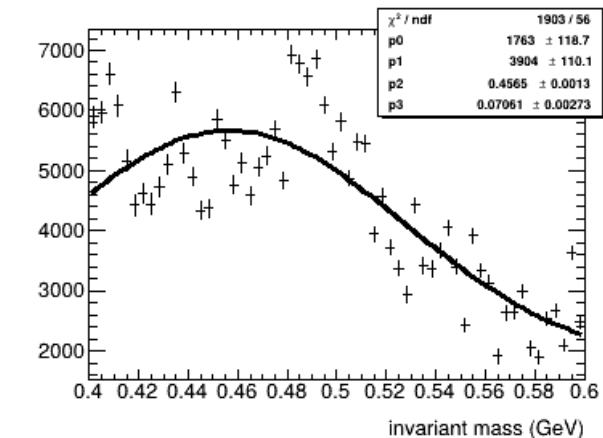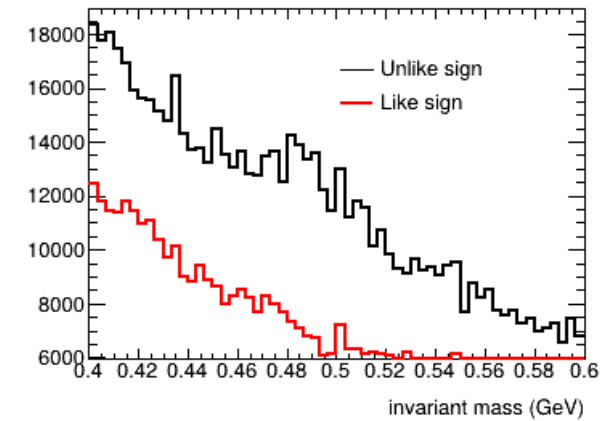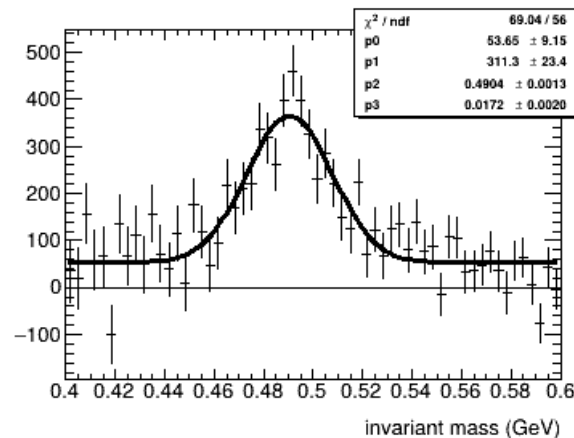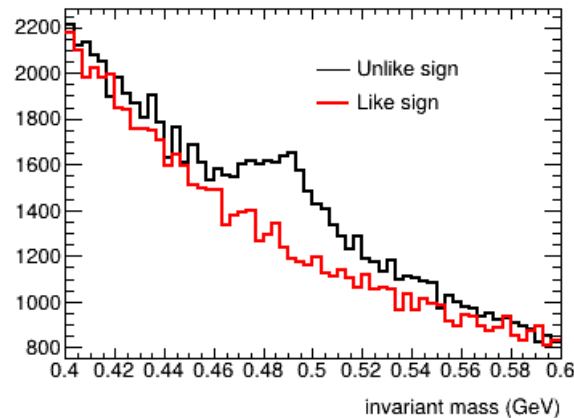
Status of K_Short Reconstruction

- Implementing some changes to track selection from KShortReco to KFParticle can give similar results over the whole trackMap,
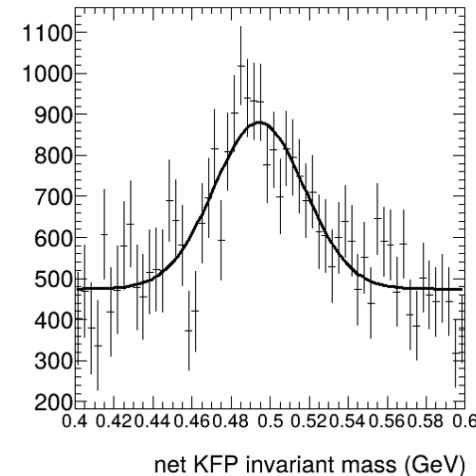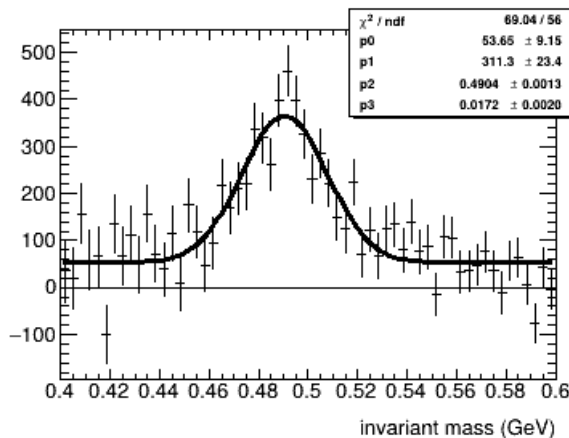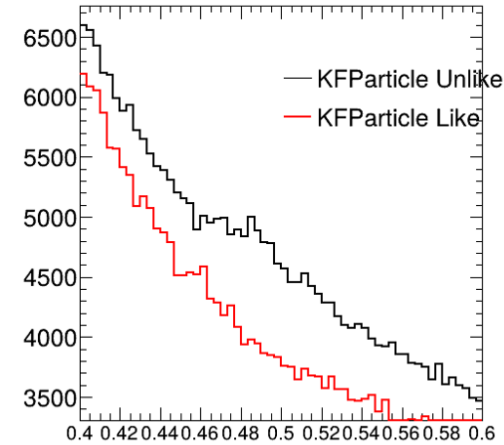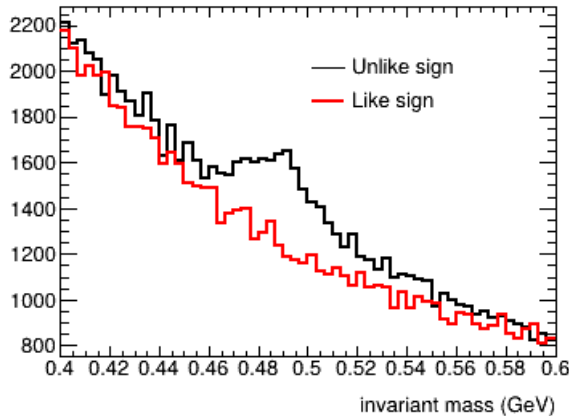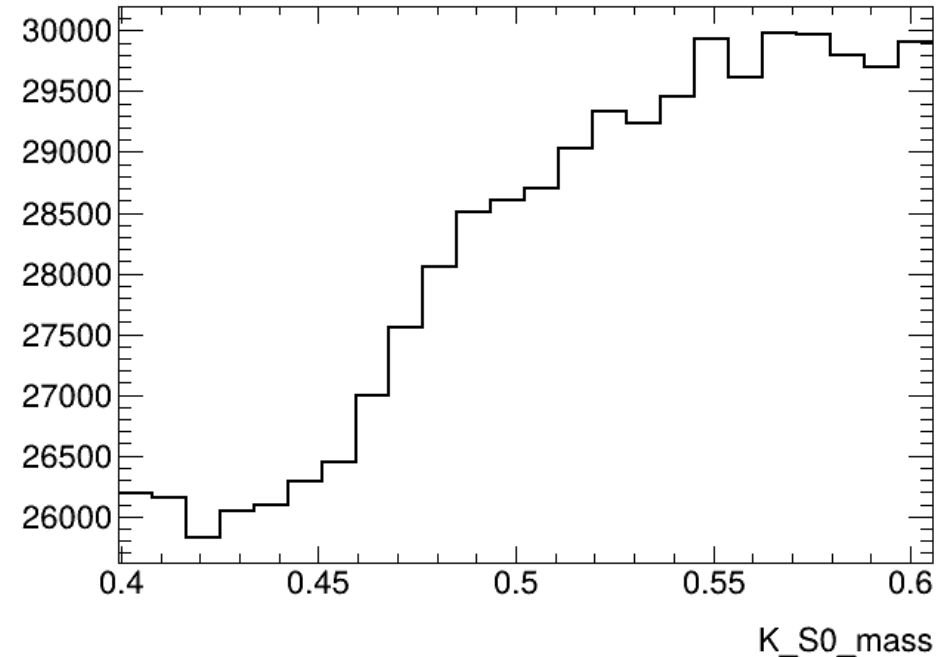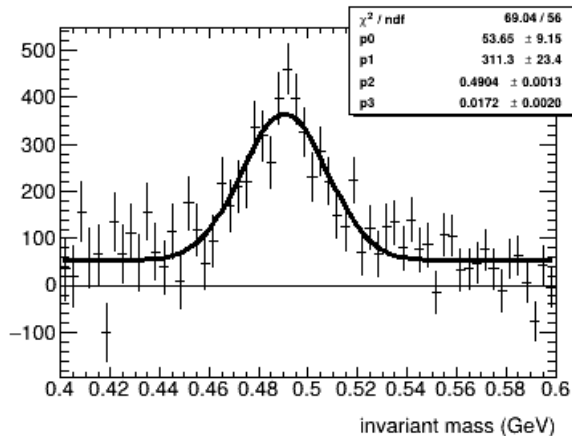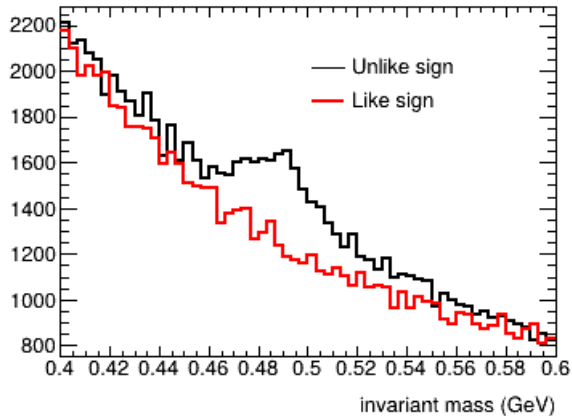

- Cuts: same crossing, both track pT > 0.2, DIRA > 0.88, pair DCA of tracks < 0.5, pathlength^2 > 0.2

What about the May Data?

- The streaming dsts for data we used back in may were flagged to not be deleted, but seem to have been anyway

- We can reproduce these, but they have to go through event combining again

- This serves as a good test of current production to make sure it can handle the old data type too

- It produced correctly on the old data– except the TPC

- Currently running changes to production that handle the old TPC data in the classic way, should finish within a day

Status of K_Short Reconstruction

- Running over 3,000,000 trigger frames (1.5M each) from 2 runs 53871 and 53877 (a lot more data from those runs is available, but picked enough of sample to see peak), on the right was KFParticle before new implementation

- Cuts: same crossing, both track pT > 0.2, DIRA > 0.88, pair DCA of tracks < 0.5, pathlength^2 > 0.2