Exclusive e+Au Phi Update Oct 8,2021

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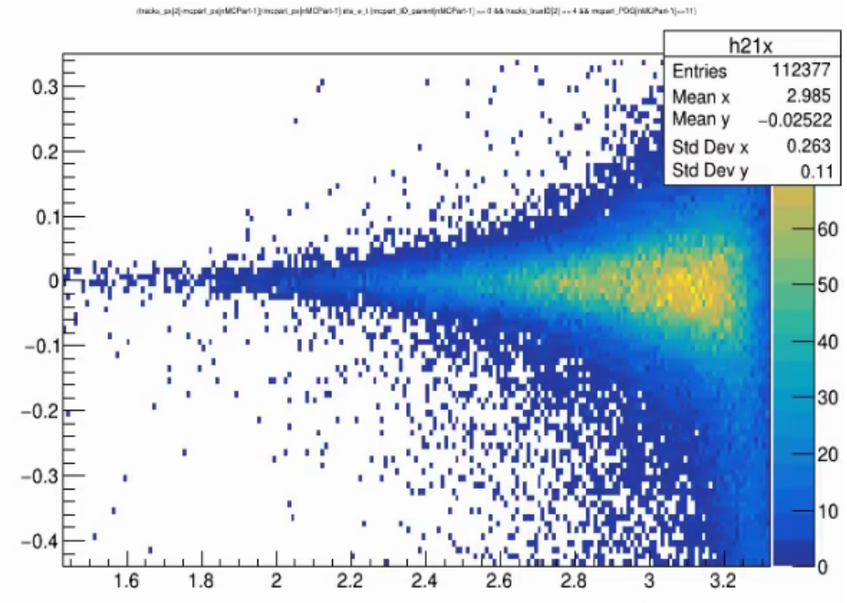
The latest – EEMC + tracking to improve Sartre signal plot

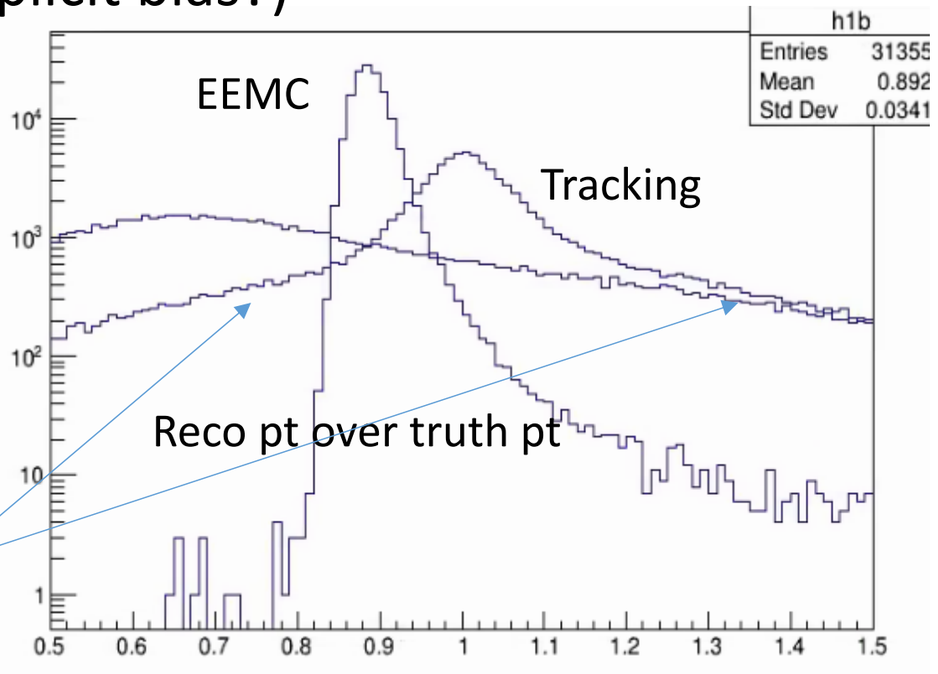
- Found EEMC resolution is good enough to help improve things ~greatly
- Especially useful to cut out large smearings on $\eta >$ ~1.5 tracking, calibrated EEMC clusters and am using average of tracking and EEMC info
- Require tight (3-8%) matching between each component of tracking four vector and re-calibrated EEMC cluster, cuts large (and even small!) smearing fluctuations/ tracking reso tails
  - (**No explicit bias from kinematic cuts- yay!-**Implicit bias?)

Track Reco pT/truth pT



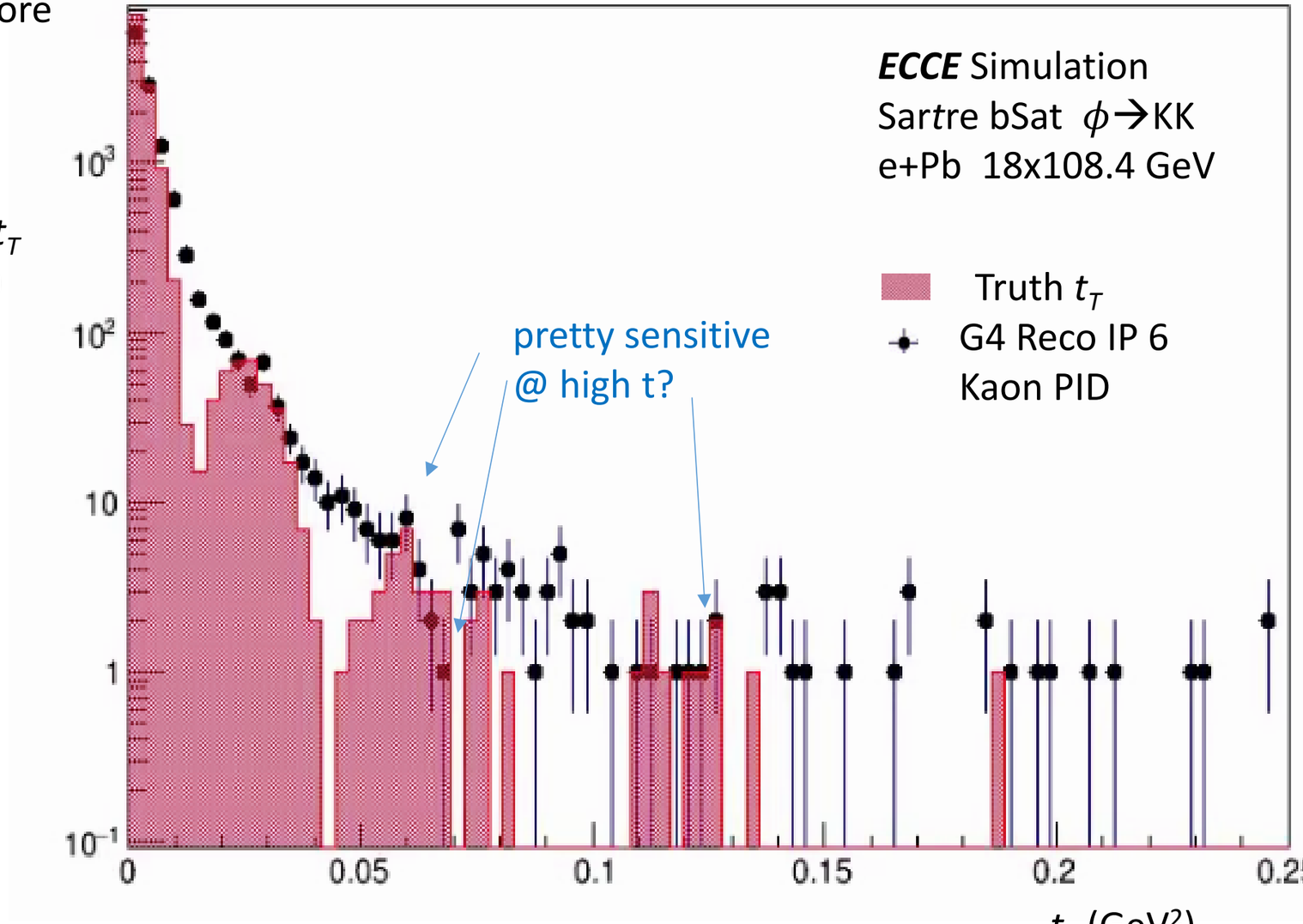
-η scattered electron

Giant smearing!



t-distribution Current status

- The latest – but with r5 still, r6 will probably need retuning of the EEMC calib
- Looks like benefit may be (as expected?) even greater at higher t/ n> 1 peaks/minima- may need more stats, r6 may have more



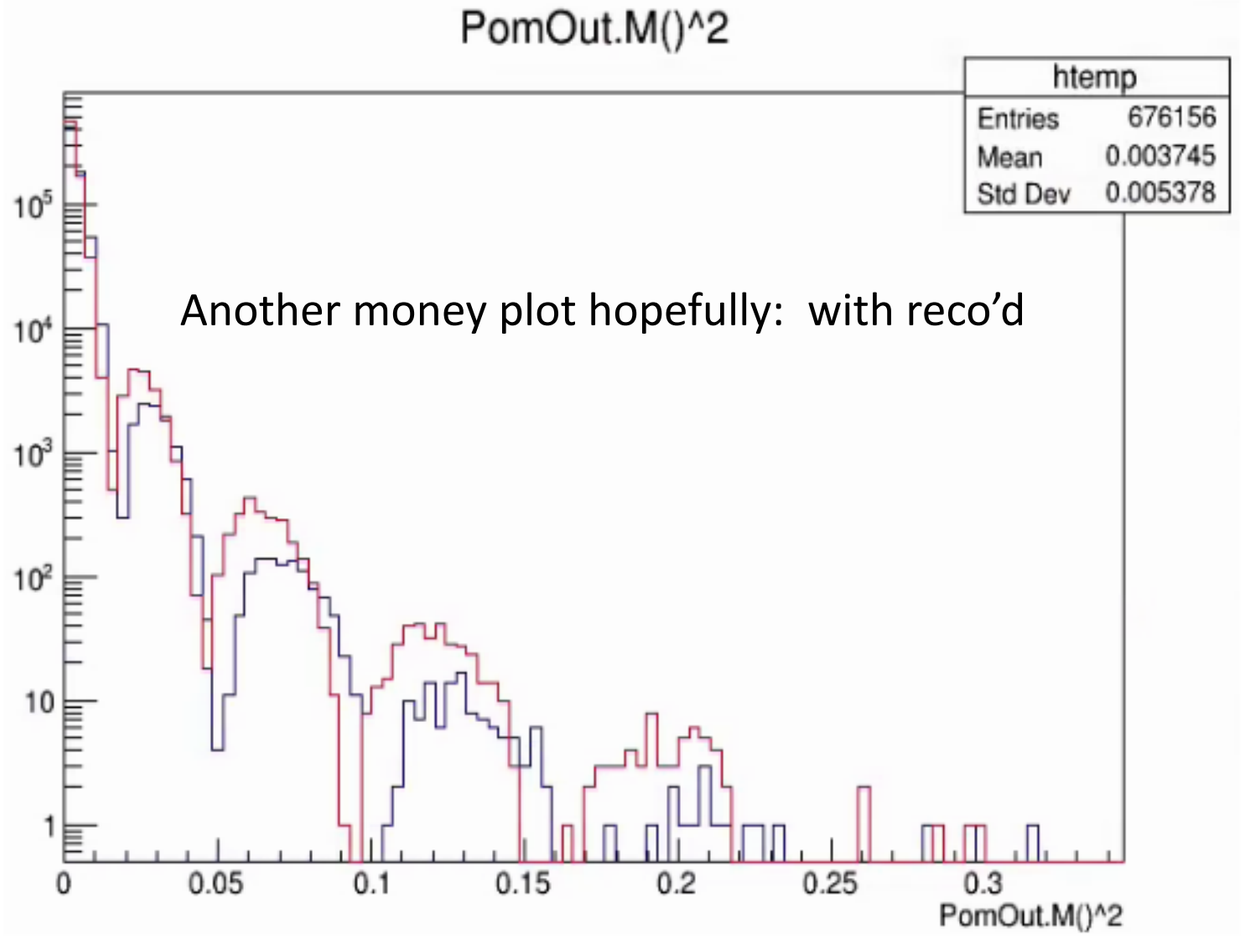
Very quick and dirty EEMC + tracking already improves greatly– expect further optimization can be done, probably won't try for Oct 11, but maybe Oct 15

No BeAGLE yet -- bkg rejection philosophy—more important to demonstrate signal can be reco'd w/ detector, possibly some bkg rejection for Oct 11/15 notes

Important : compare Sat and nonsat

Saturated vs Nonsaturated t-distribution

Saturated vs Nonsaturated Sartre ePb shows pretty good shift – hopeful to see difference in current reconstructed

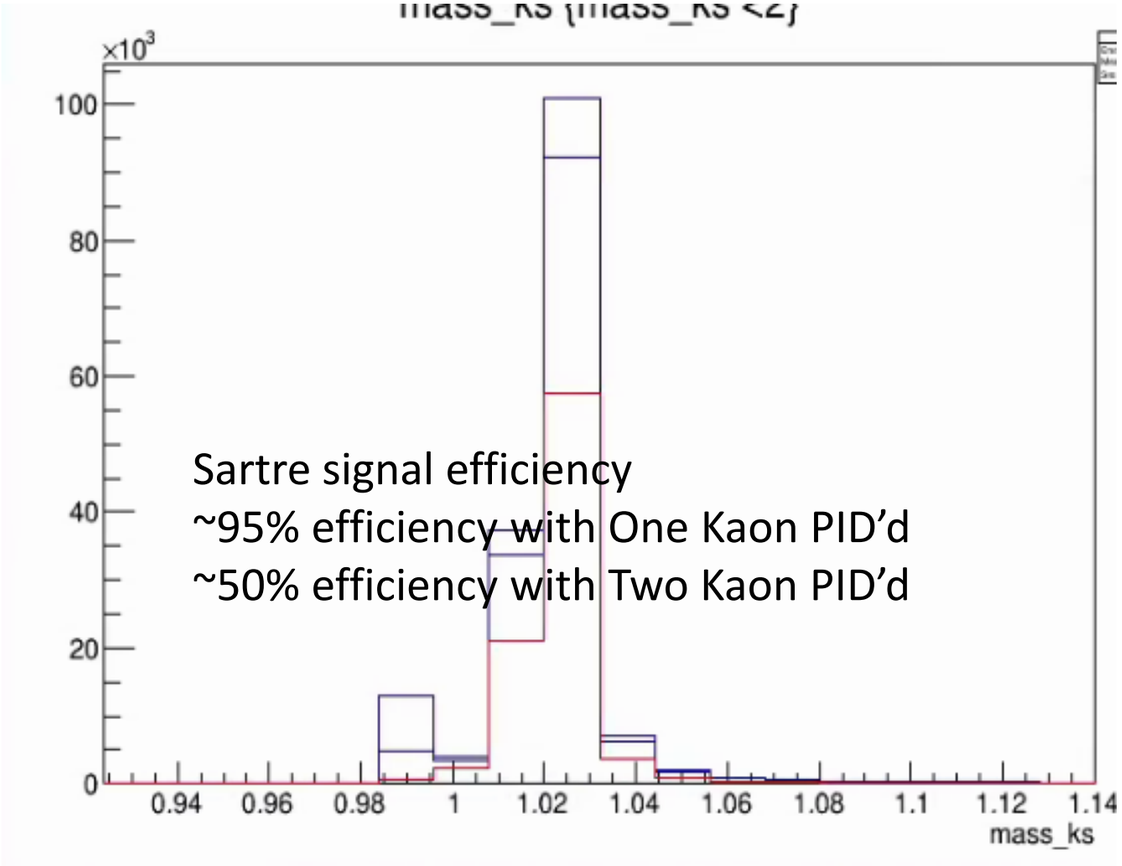


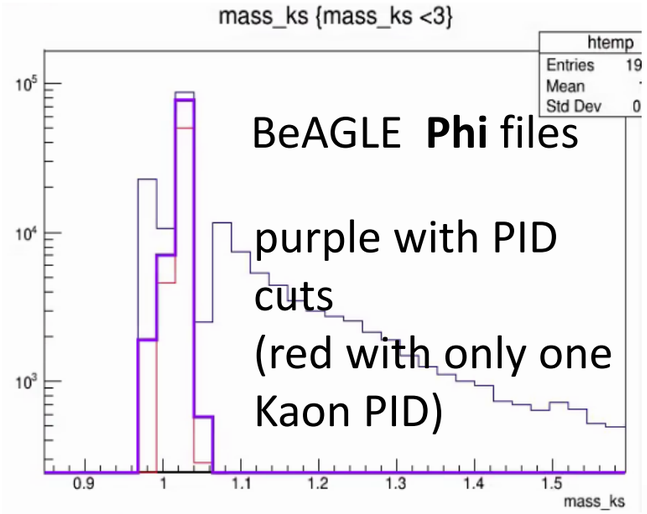
TODO / Comments

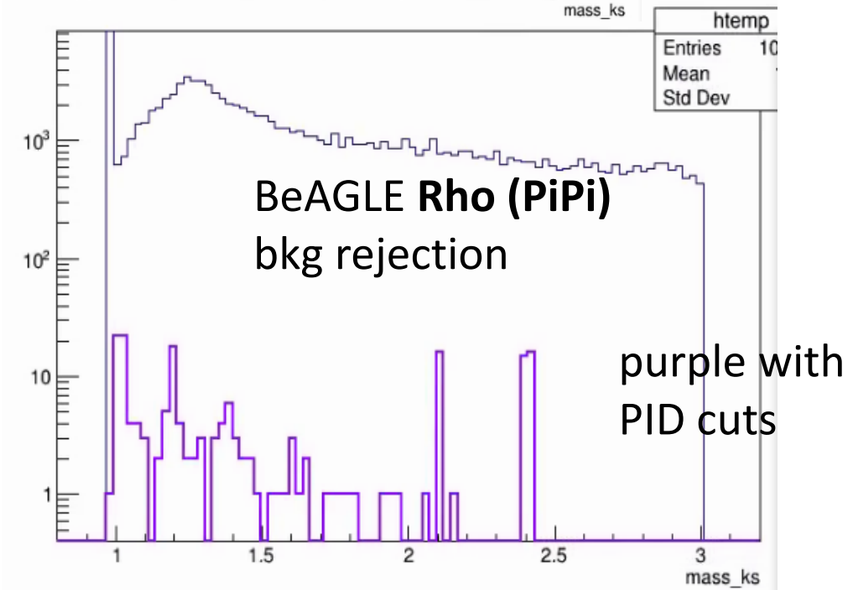
- Overall normalization and statistics: Peter and I had inititial discussion about that, everything is understood and fairly easy
  - Take incoherent (BeAGLE bkg) normalization from Sartre vs coherent ratio
  - Expected that stats shown are only small fraction of what we will get in ECCE so we can afford brutal cutting (EEMC matching currently cuts about 90% of stats)
- Analysis Note

PID (all ePb 108)

- Also have PID “working” -- these are not real performance plots but just demonstrate can clean with K PID
- Using track_kaon_LL – track_pion_LL >1







Some Acceptance Plots

Will also include some acceptance/performance plots for analysis note/document… what else?