

A Quick Update on u -channel ρ^0 Benchmark

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CALIFORNIA EIC
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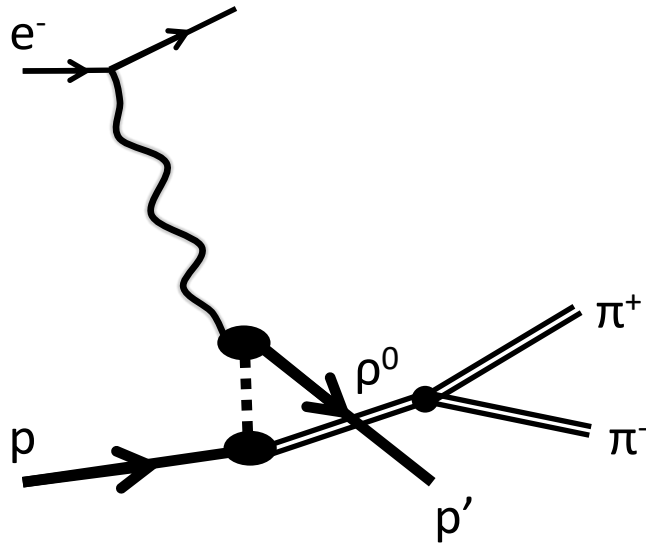
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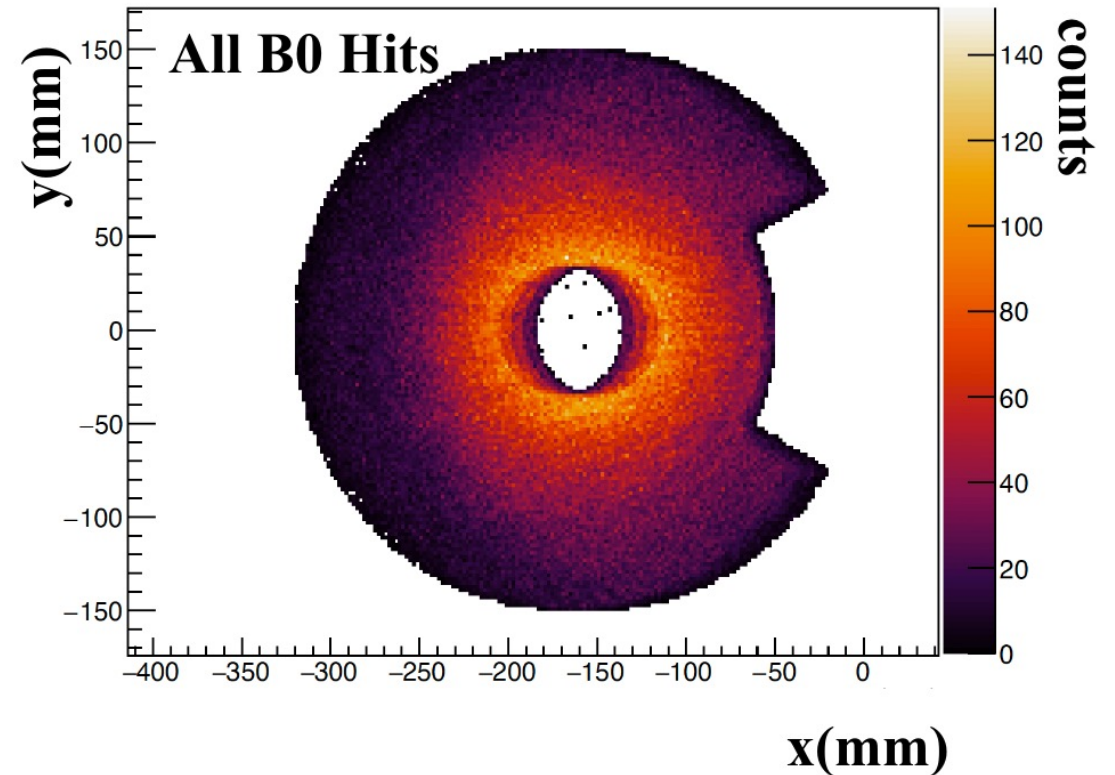
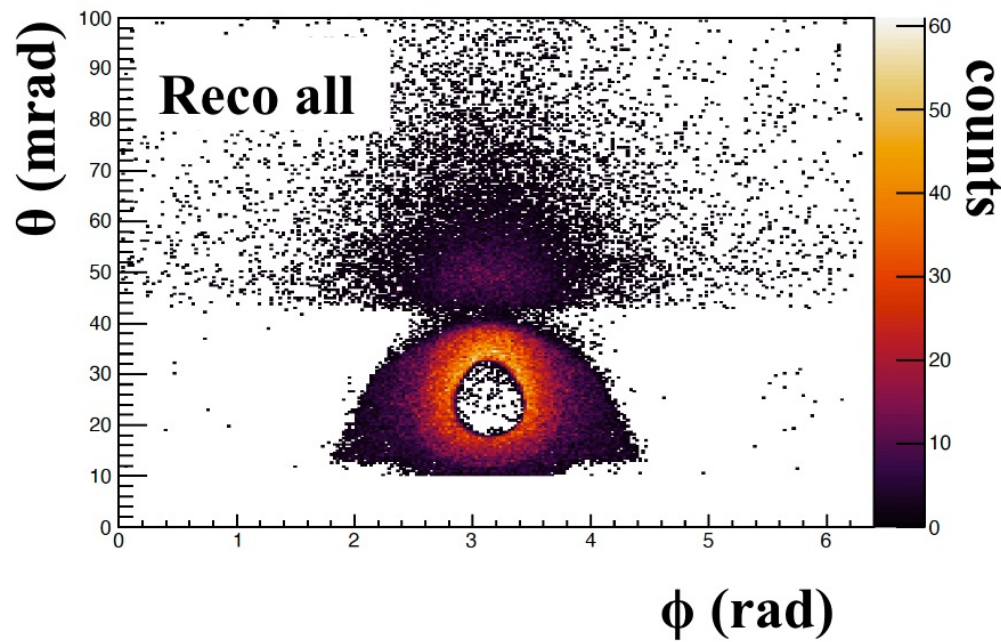
RECAP: u -channel $\rho^0 \rightarrow \pi^+\pi^-$ in B0



- We developed model for backward ρ production
- Edited eSTARlight to produce this channel
- Made event samples for the simulation campaigns
- These samples are now run in each campaign and can be found on S3:
 - [eictest/EPIC/RECO/24.03.1/epic_craterlake/EXCLUSIVE/UCHANNEL_RHO/10x100](#)
- These charged pions land in the B0

u -channel $\rho^0 \rightarrow \pi^+\pi^-$ in B^0

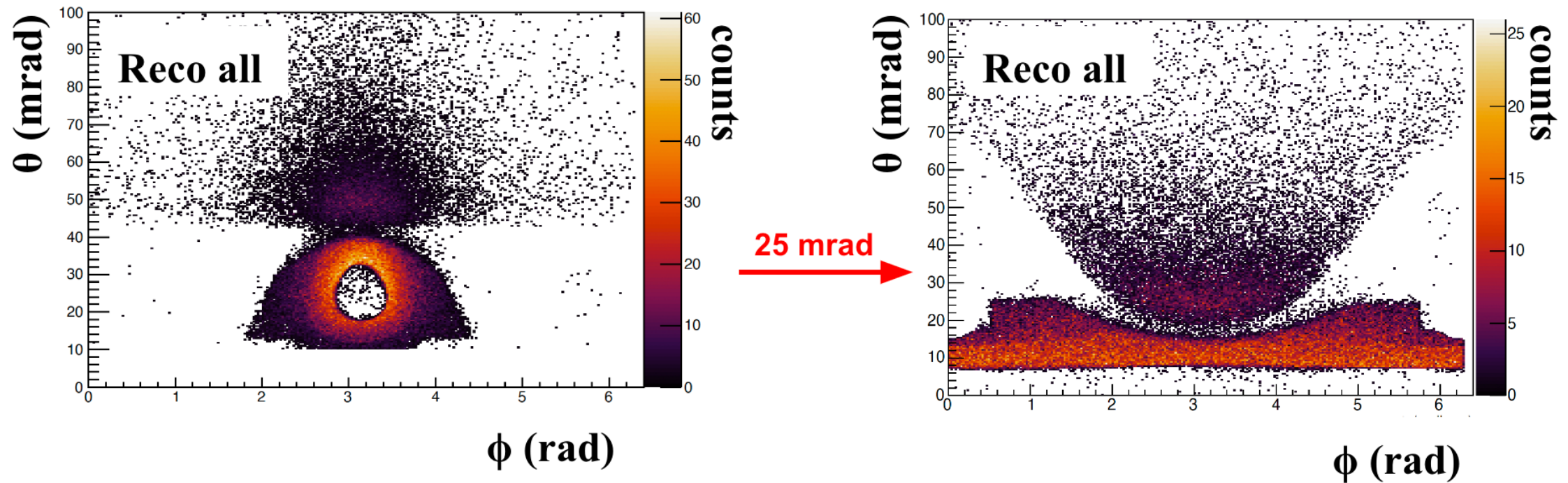
- I plotted angular acceptance of reconstructed tracks

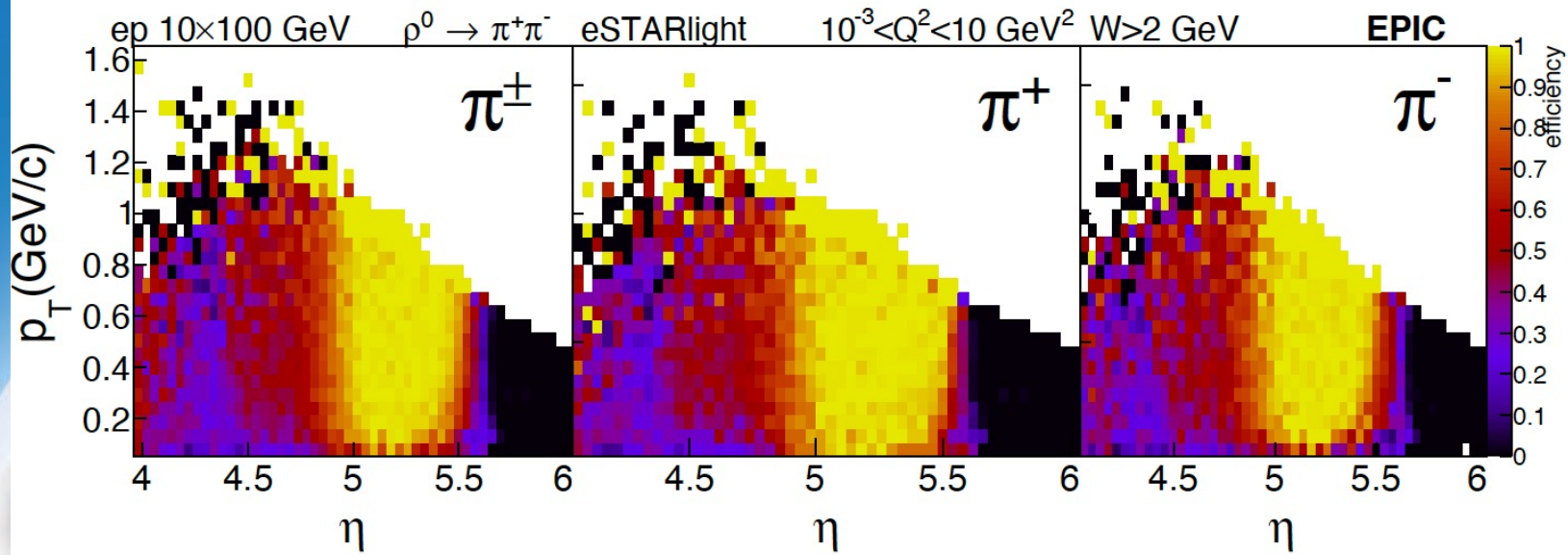


u -channel $\rho^0 \rightarrow \pi^+\pi^-$ in B0

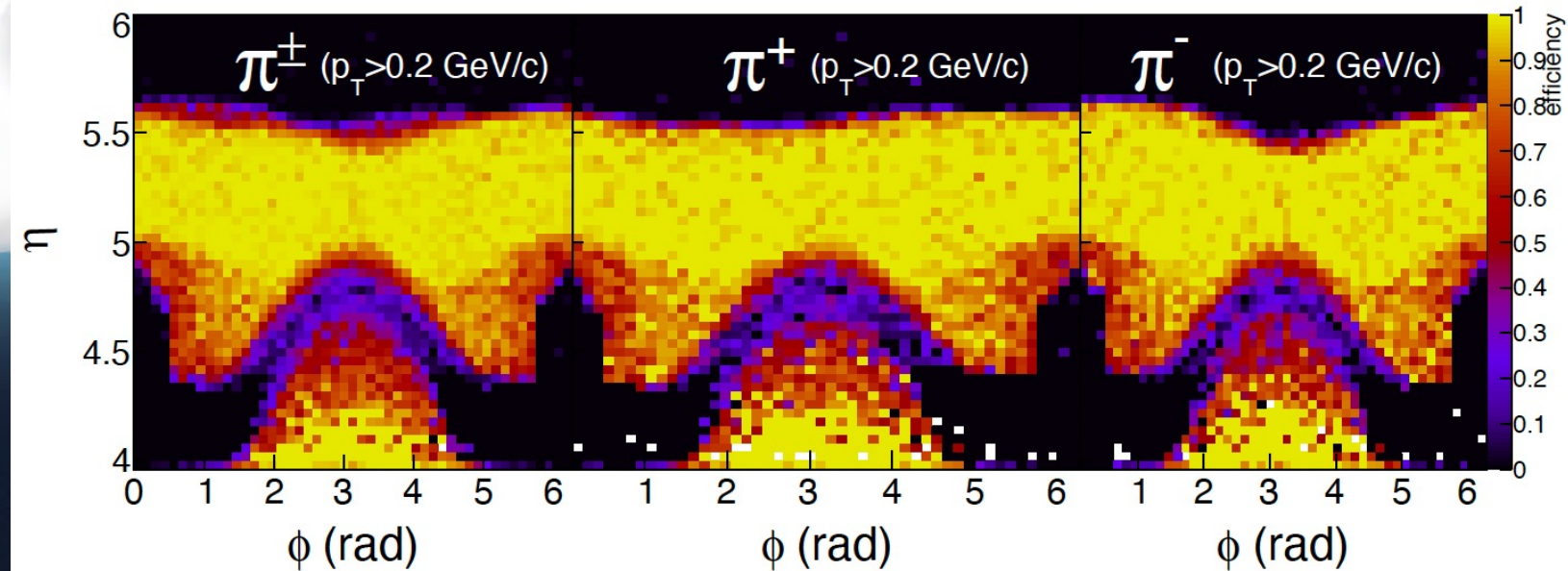
- eicrecon uses coordinate system wrt electron beam pipe
- Far-forward tracks should be rotated by crossing angle

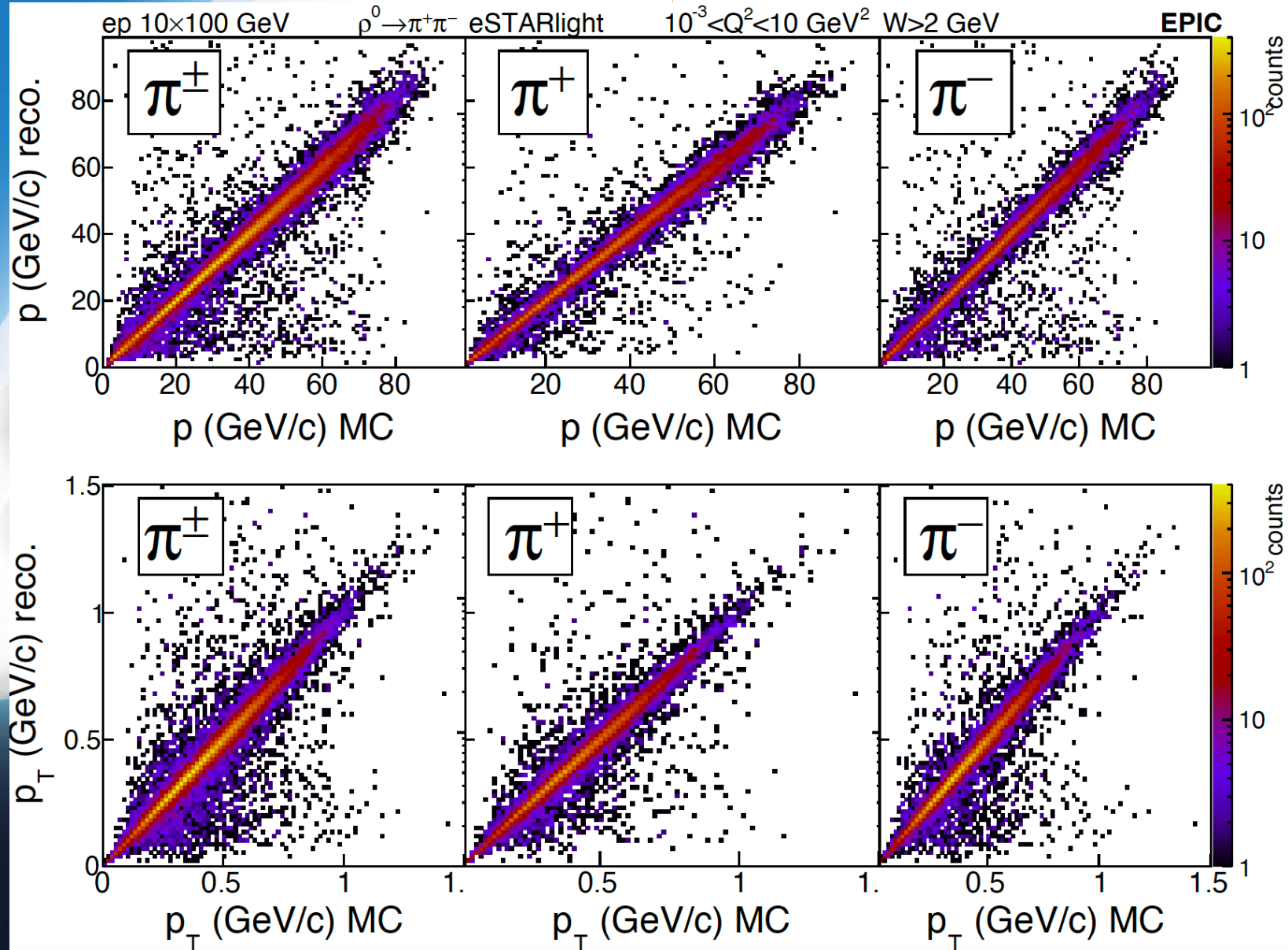
To analyze B0 reco tracks wrt the hadron beam:
`track.RotateY(0.025);`





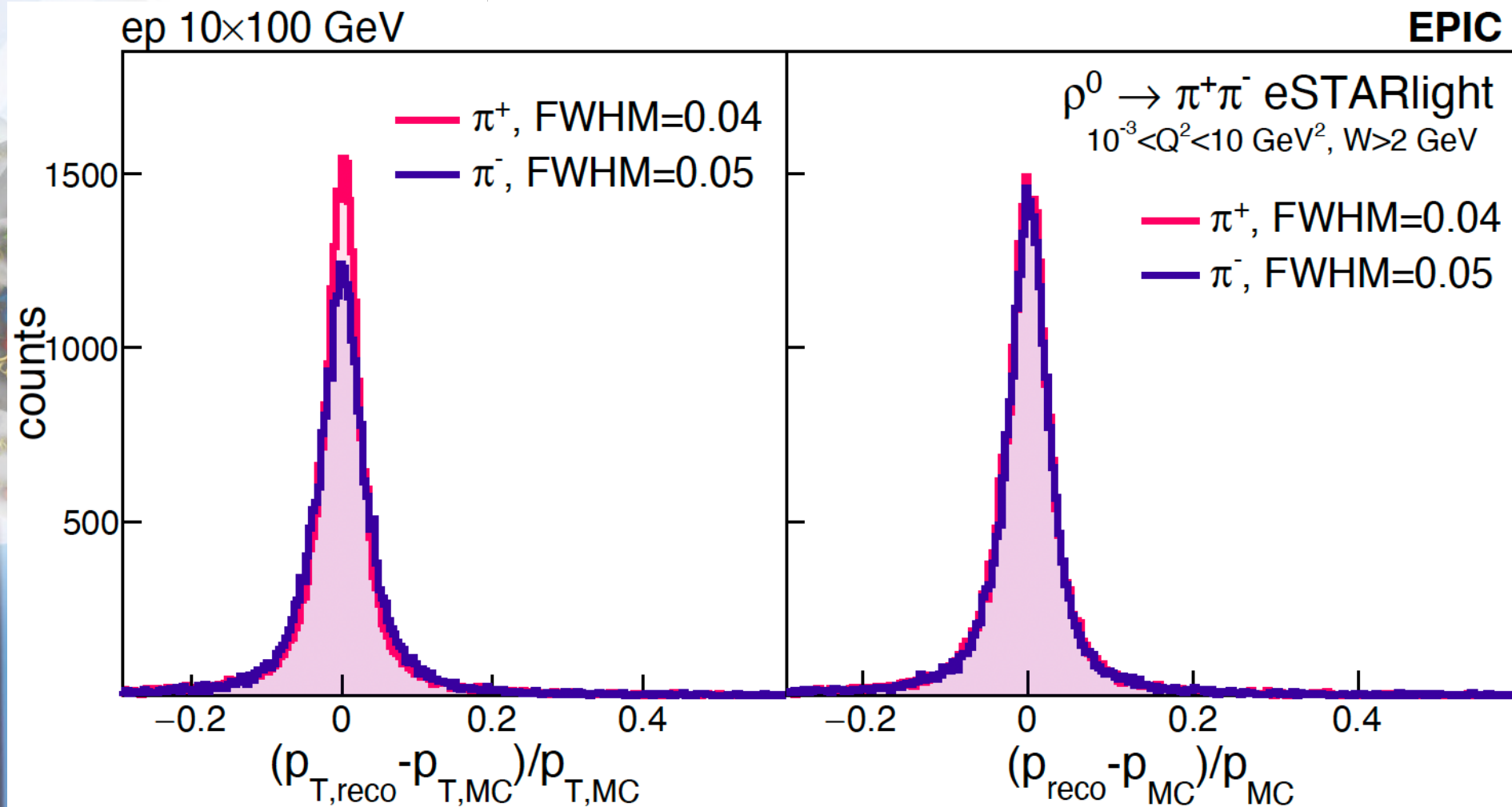
Benchmark plot:
 $\pi^+\pi^-$ reconstruction
efficiency



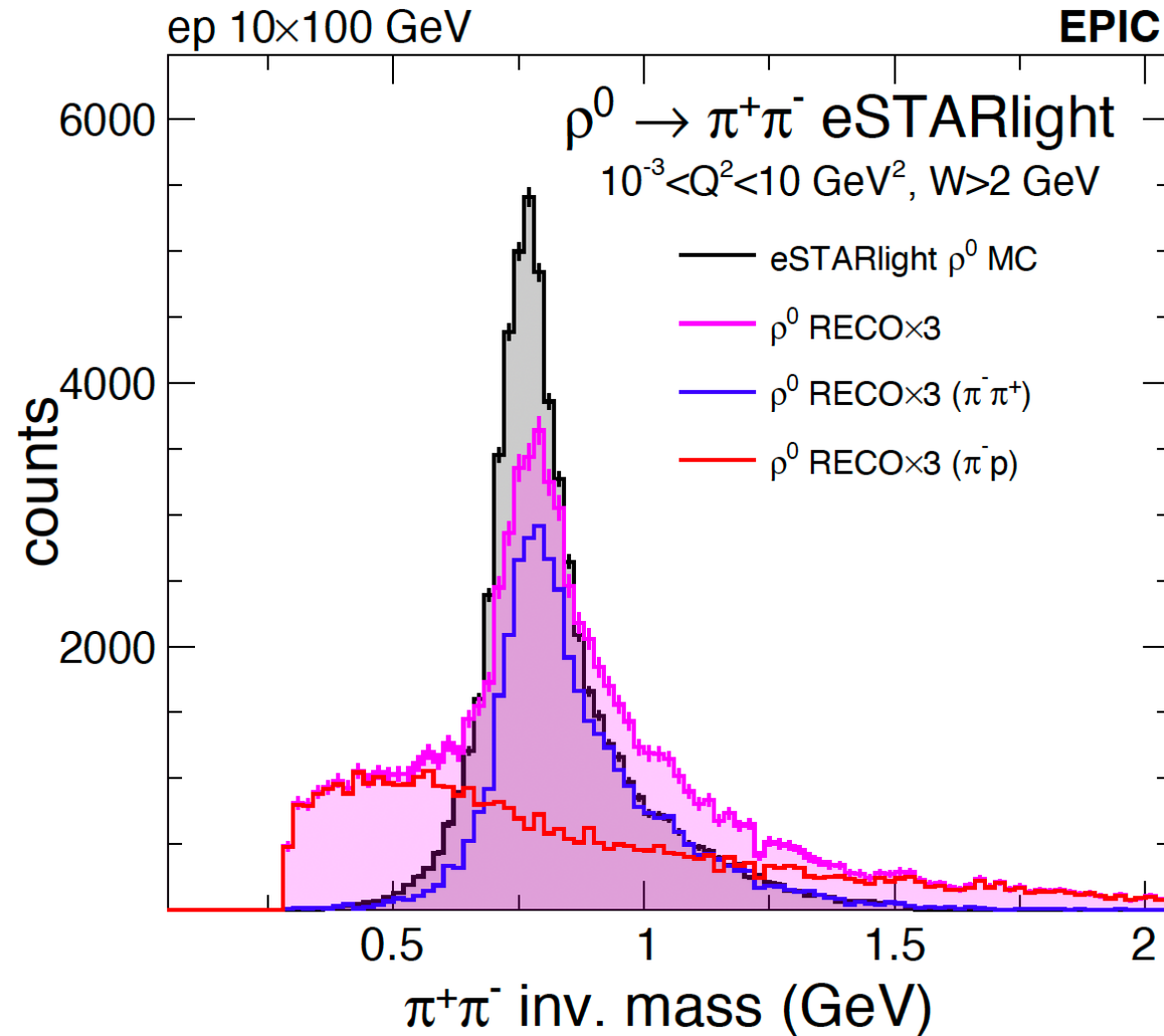


Benchmark plot:
 $\pi^+\pi^-$ reconstruction
quality

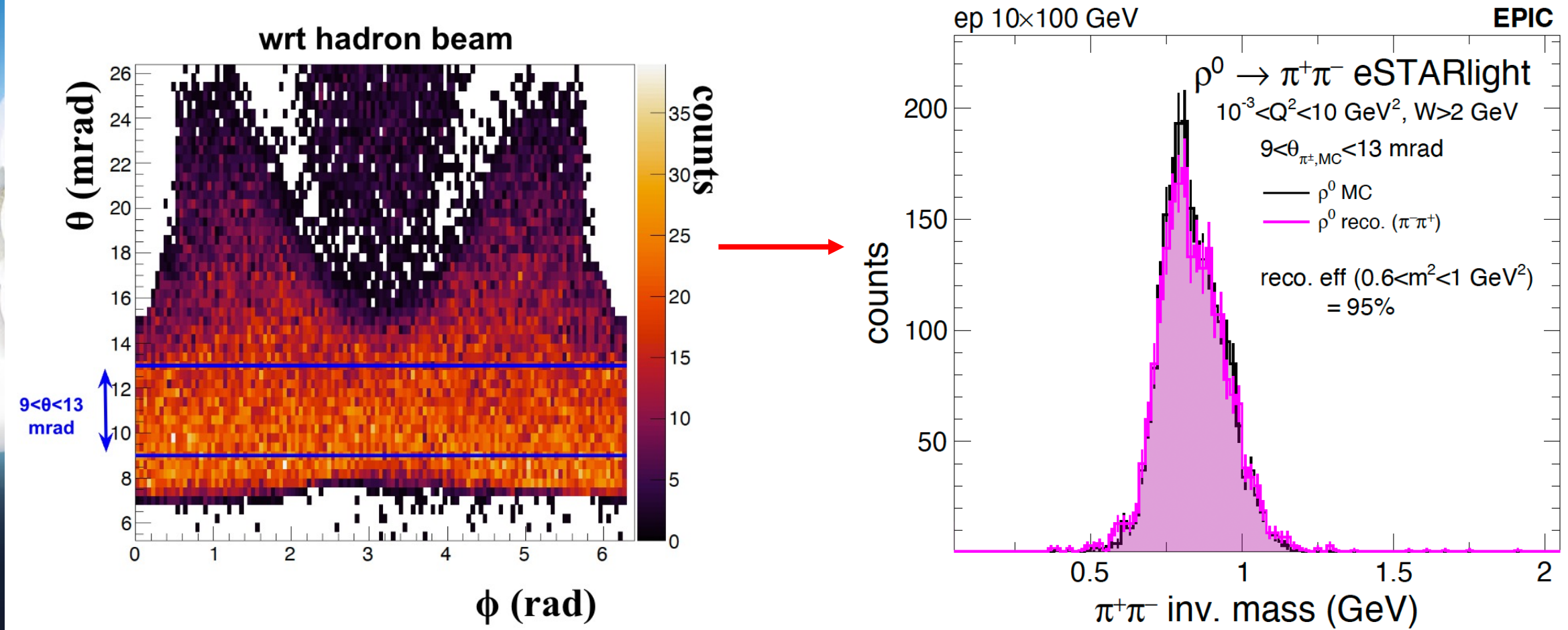
Benchmark plot: $\pi^+\pi^-$ reconstruction quality (percent)



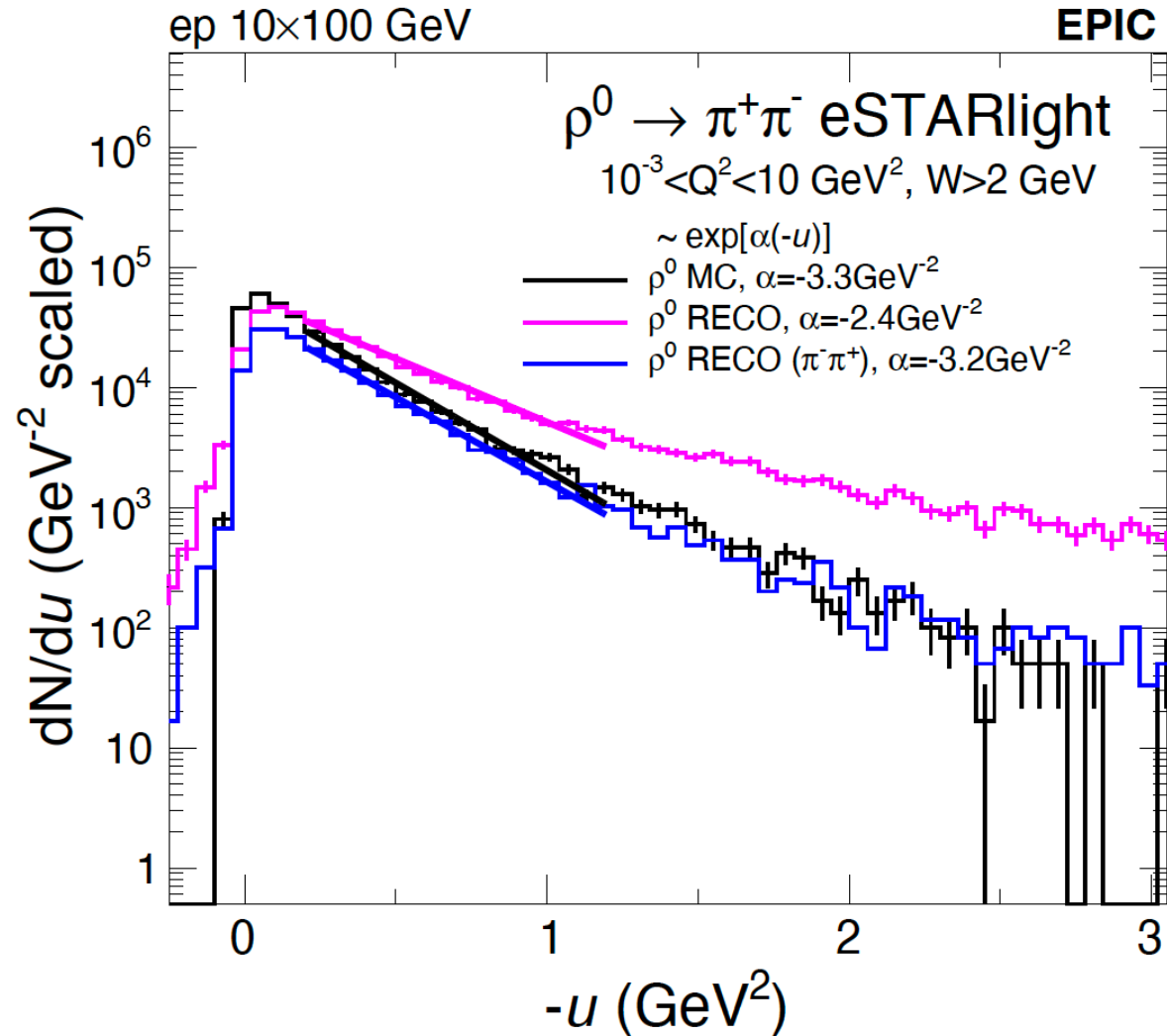
Benchmark plot: ρ^0 mass reconstruction



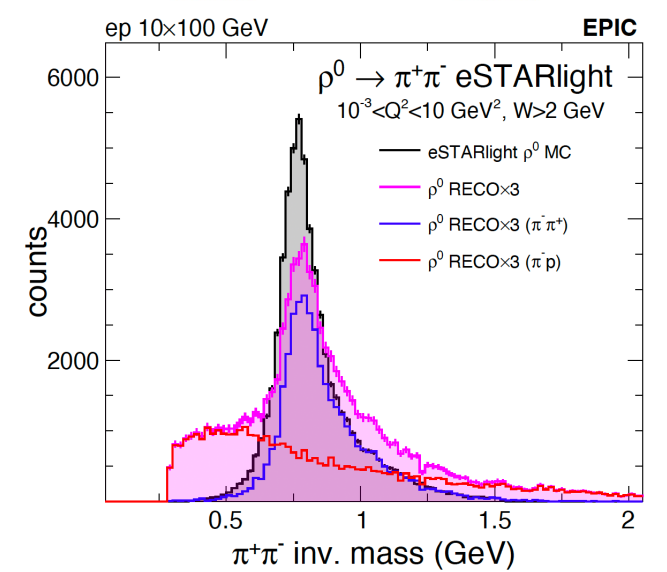
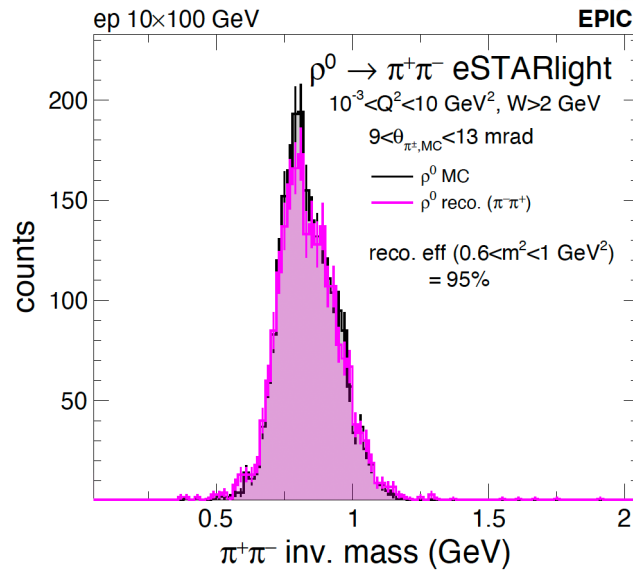
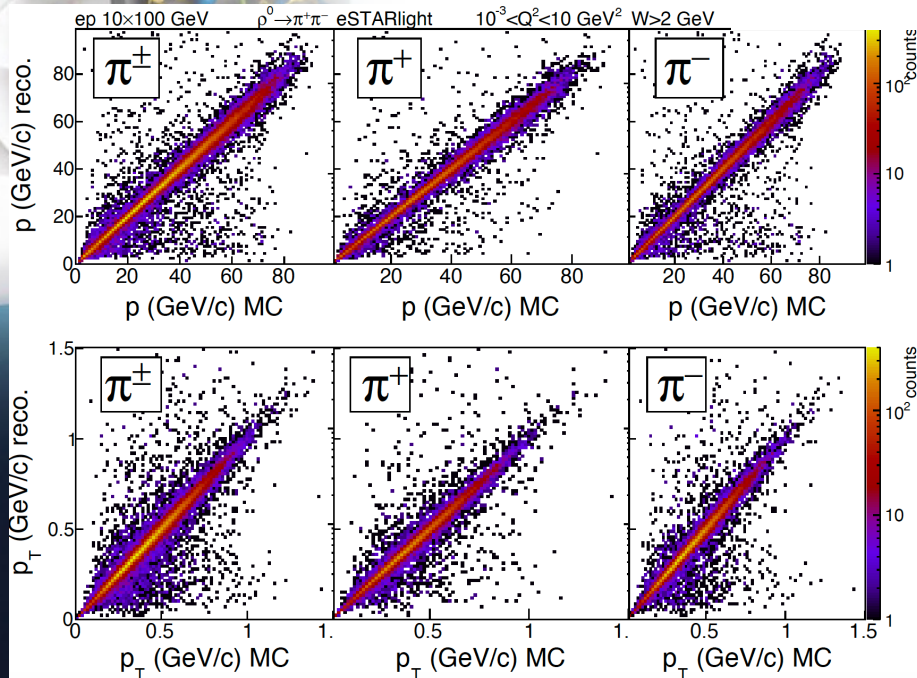
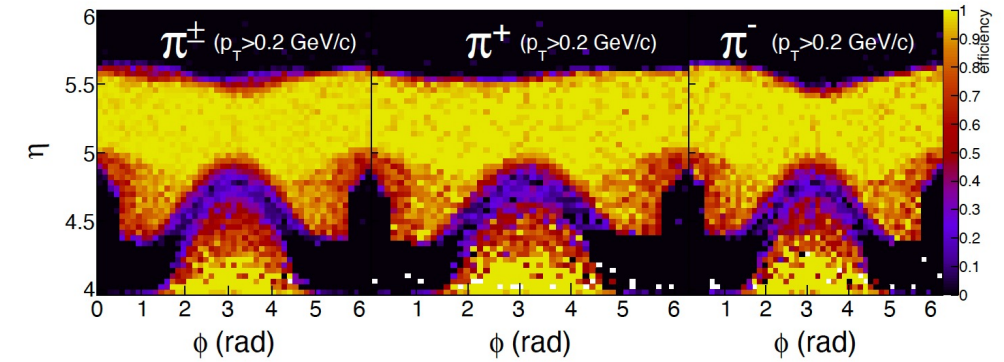
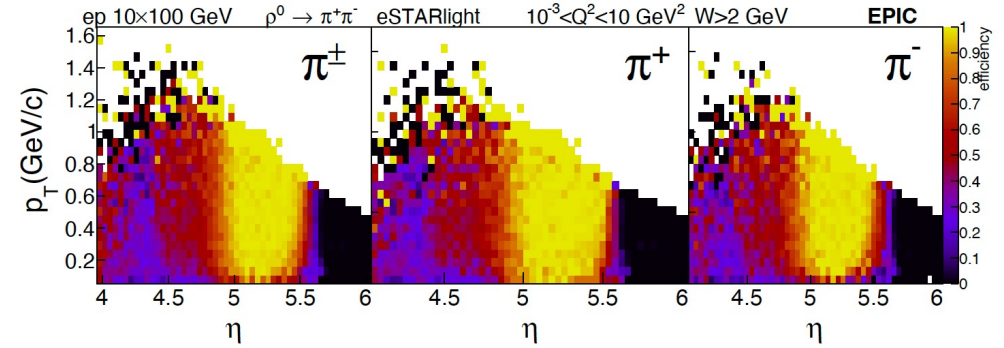
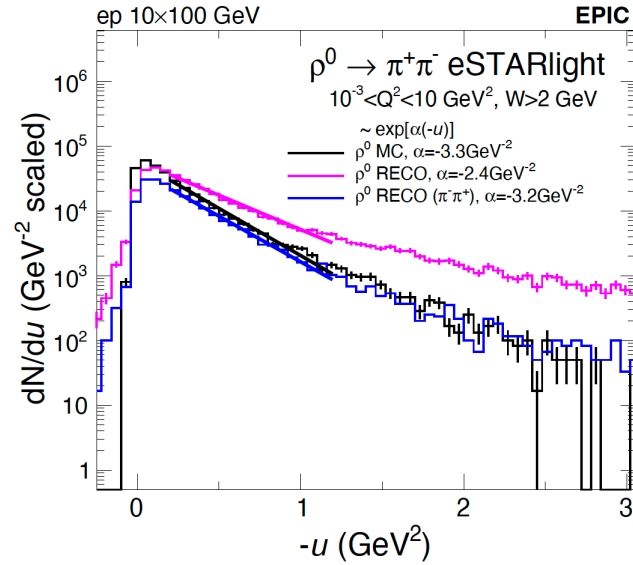
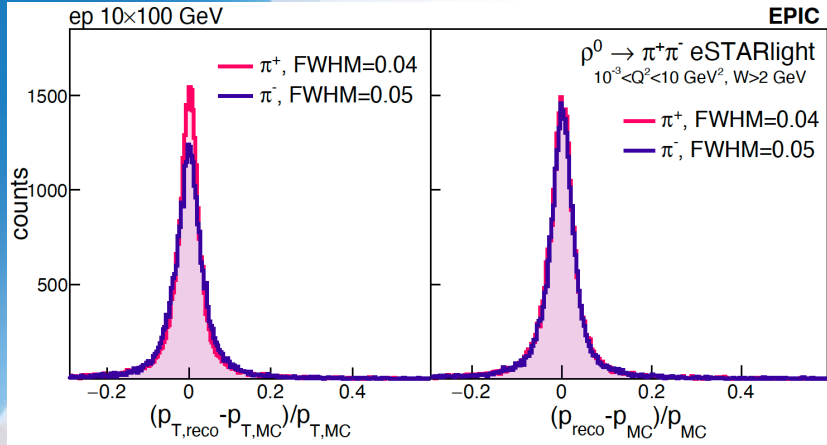
Benchmark plot: ρ^0 mass reconstruction within B0

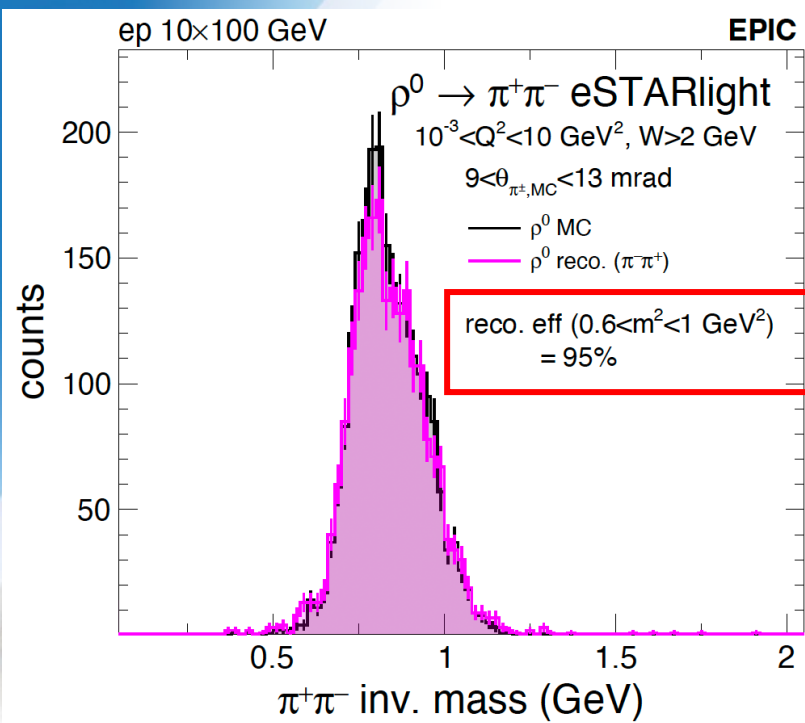


Benchmark plot: u -channel slope reconstruction



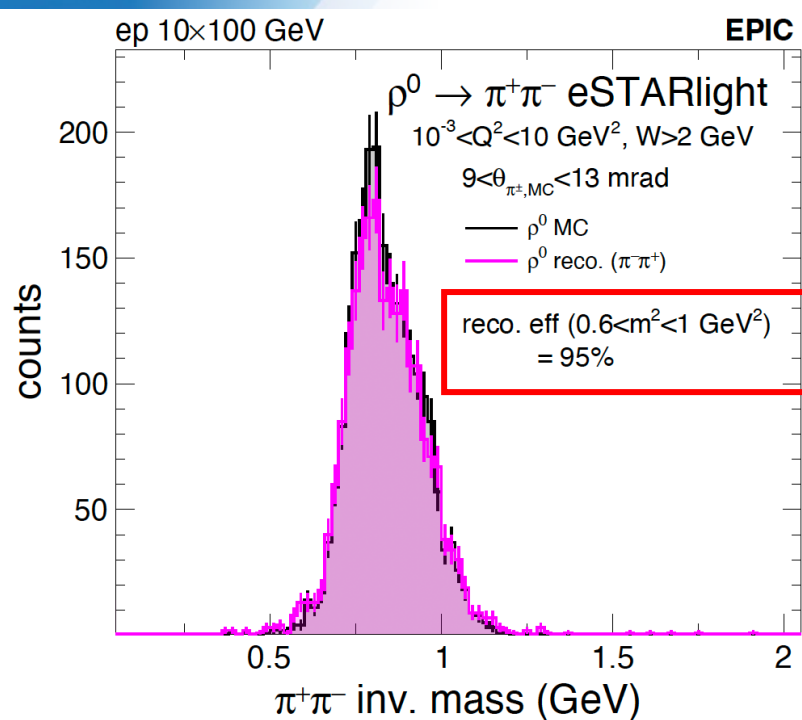
Benchmark Figures





Benchmark Status Flag: ρ^0 Reconstruction Efficiency

- Raise a bad status flag if this eff. drops below 90%
- Status procedure detailed in [common bench](#) repo



Benchmark Status Flag: ρ^0 Reconstruction Efficiency

- Raise a bad status flag if this eff. drops below 90%
- Status procedure detailed in [common bench](#) repo
- The benchmark status flag seems to have worked

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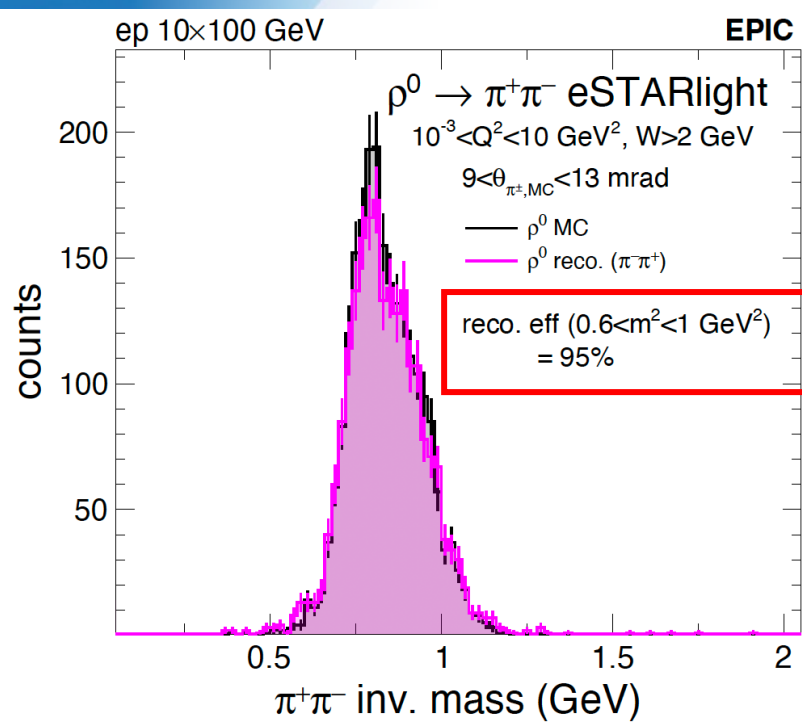
```

2178 Writing test data to rhorecoeff.json
2179 {
2180   "tests": [
2181     {
2182       "description": "u-channel rho->pi+pi- reconstruction efficiency when both pions should be within B0 acceptance",
2183       "name": "rho_reconstruction_efficiency",
2184       "quantity": "efficiency",
2185       "result": "pass",
2186       "target": "0.9",
2187       "title": "rho Reconstruction Efficiency for rho -> pi+pi- in the B0",
2188       "value": 0.9605459586265728,
2189       "weight": 1.0
2190     }
2191   ]
2192 }
  
```

Duration: 4 minutes 50 seconds
 Finished: 14 minutes ago
 Queued: 0 seconds
 Timeout: 6h (from project) ⓘ
 Runner: #71 (Twswh3hWs) Runner on eic-n0 with write access to scratch
 Tags: [phy-scratch](#)

Job artifacts ⓘ
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Trigger token: b5c6



Benchmark Status Flag: ρ^0 Reconstruction Efficiency

- Raise a bad status flag if this eff. drops below 90%
- Status procedure detailed in [common bench](#) repo
- The benchmark status flag seems to have worked
- Flag not yet propagated to last pipeline step

collect

- backgrounds:results
- diffractive_vm:results
- dis:results
- dvcs:results
- single:results
- tcs:results
- u_channel_rho:results
- u_omega:results

finish

- summary

status-report

- benchmarks:physics:failure
- benchmarks:physics:success

Conclusions

- I'm finalizing rho benchmark plots
 - Let me know if you think of a useful plot to add!
- I still need to
 - update benchmark to re-simulate every time
 - propagate status flag through pipeline



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Thank you for your attention!

zwsweger@ucdavis.edu