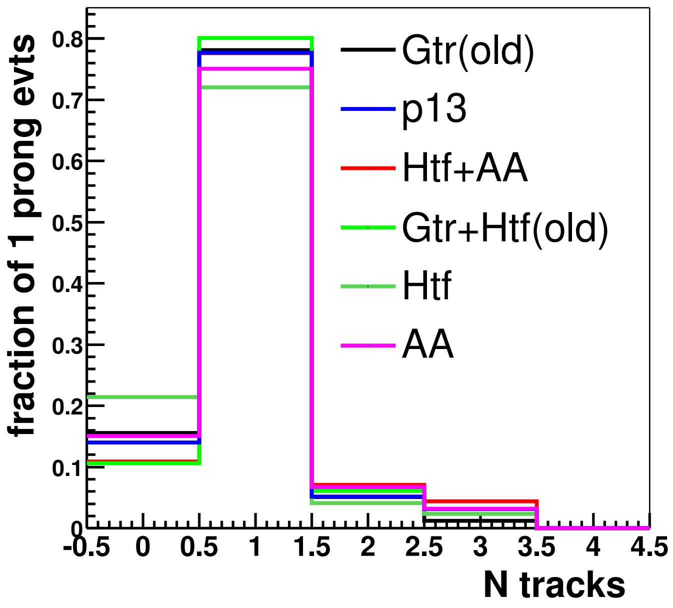
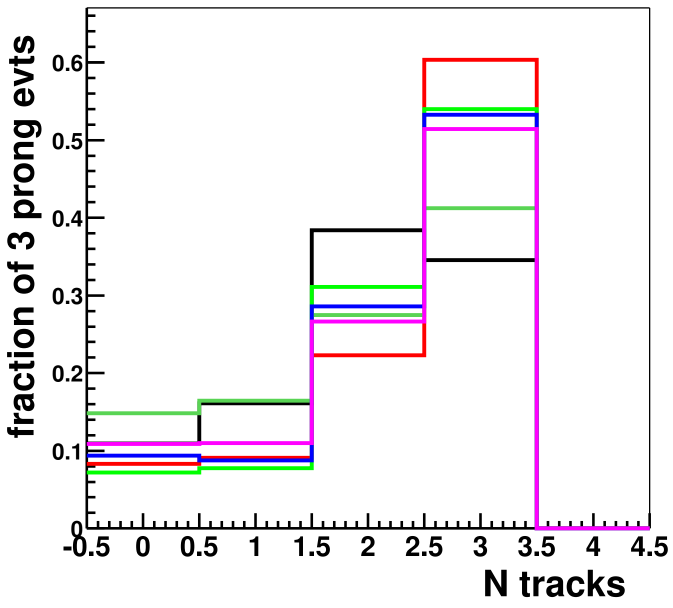
Tracking for taus

- “easy” first sign of taus: peaks at 1+3 tracks above background for taus
- problem: 3 prong tau decays: 3 relatively stiff track which tend to be very close (not checkable in data!)
- p10 efficiency for 1 prong tracks was about 90%, for 3 prongs around 80%, for 3 prongs to be reconstructed as three prongs-¿($\mathbf{0.8^3 \approx 0.5}$)
- TARCI: 1-prong efficiencies 98% (central, all algorithms except AA) whole region: 90% best (Htf+Ela)
- TARCI: 3 prong efficiencies 93% central, 85% whole region, Htf+Ela best, gain 8% over Gtr alone

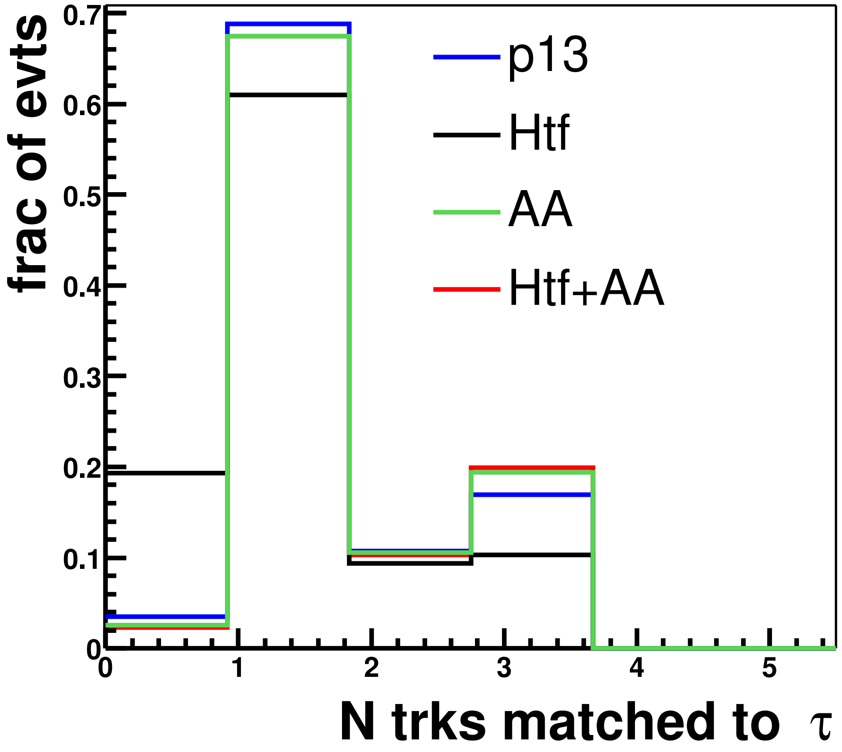
MC multiplicity versus reconstructed

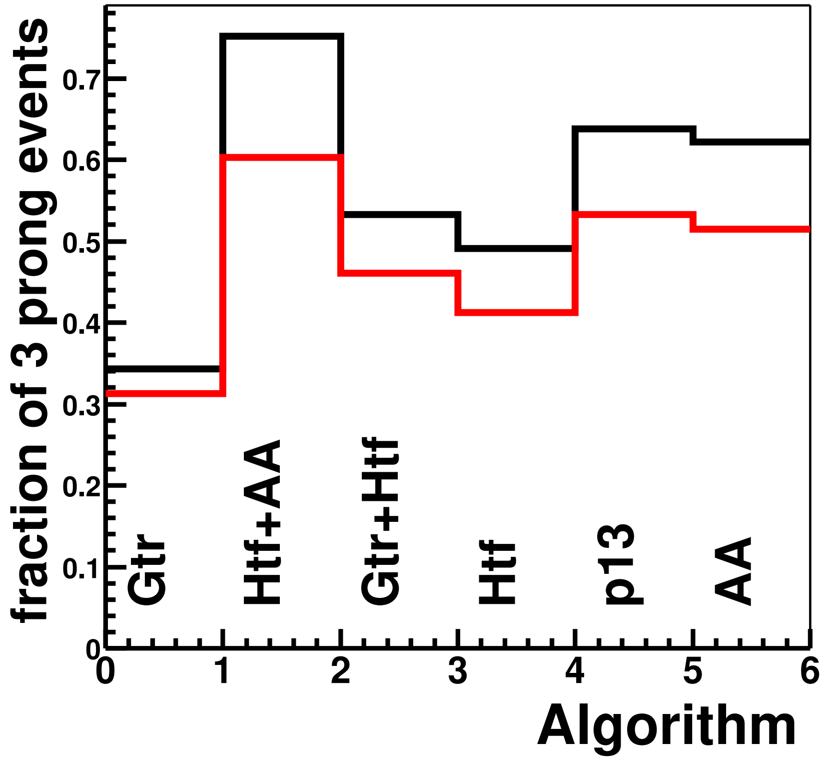




big improvements of p13 tracking over p11
Htf+AA performce looks best

3 prong - efficiency versys "fake"





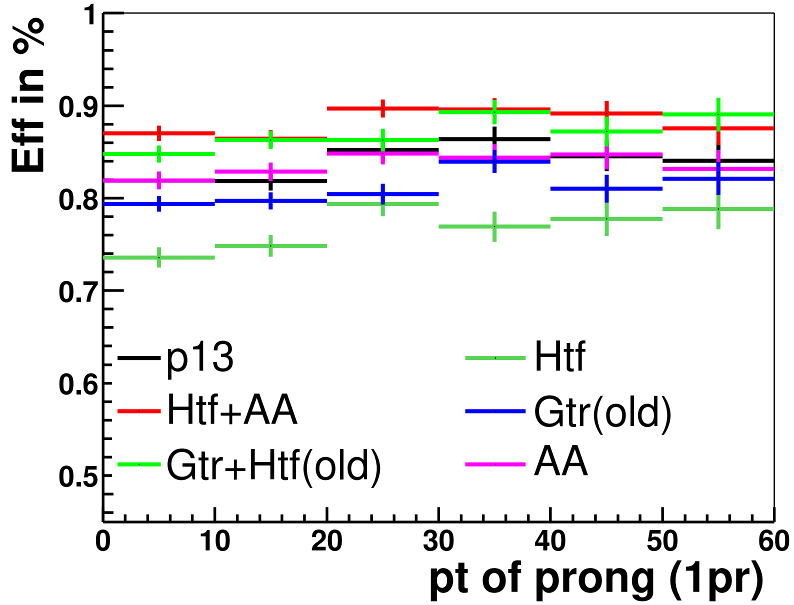
right: number of tracks matched to τ's ($|\eta| < 2$)

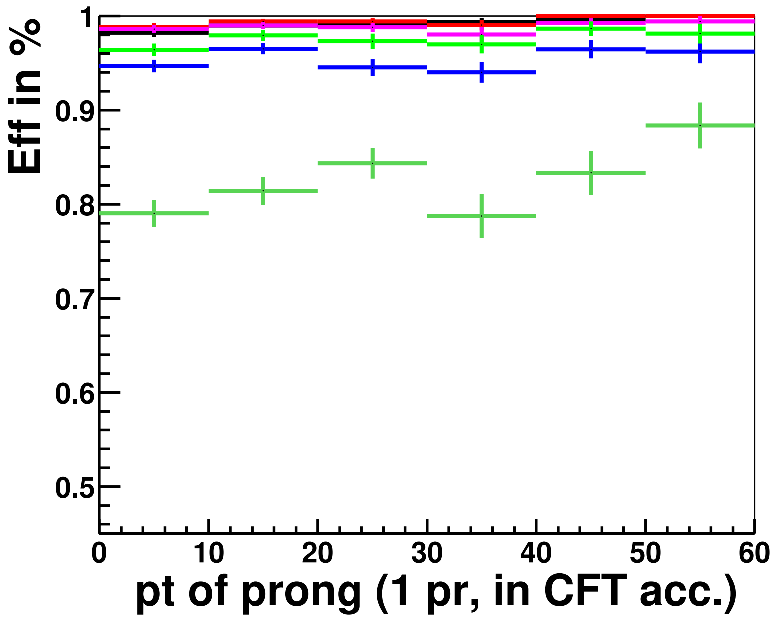
left:red curve: efficiency, black: all taus w. 3 trks / 3 prong evnts

diff: 1 prongs with two add matched tracks:

19% of reco-3 track events for Htf+aa, 17% for other new algorithms, 9 for p11

Tracking efficiency versus pT (1 prong)



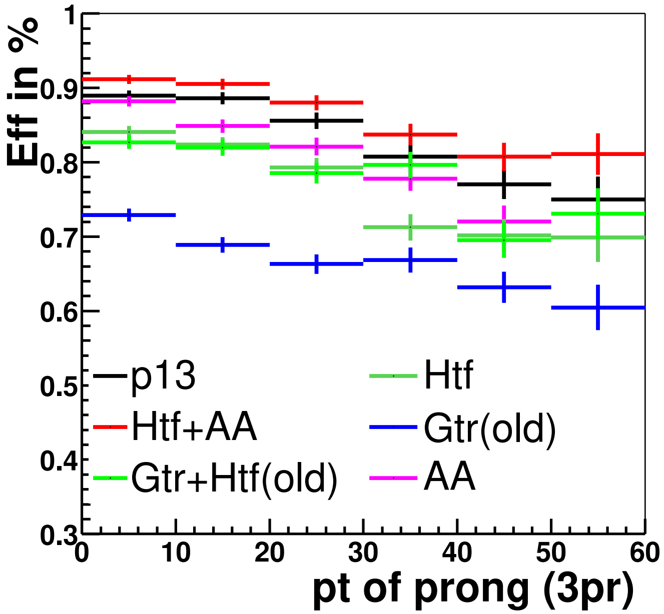


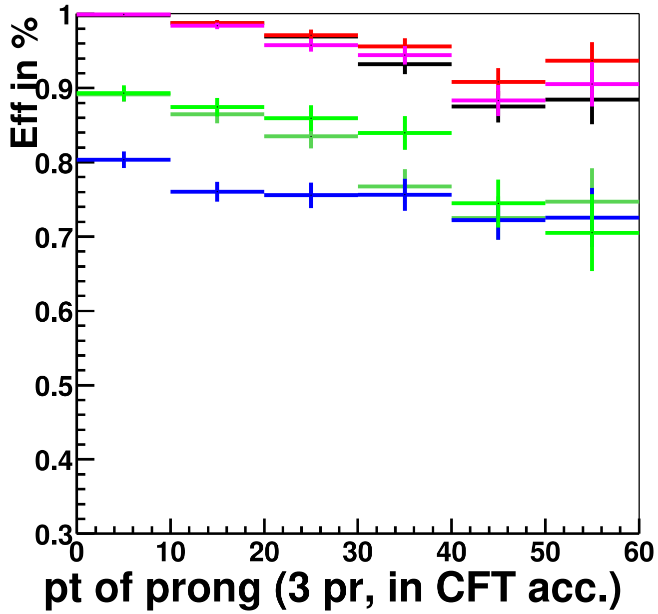
Htf stabdalone performace look considerably worse than other algorithms

HTF+AA has best efficiency in whole region

1 prong tracking in CFT acc: 95% to 98%

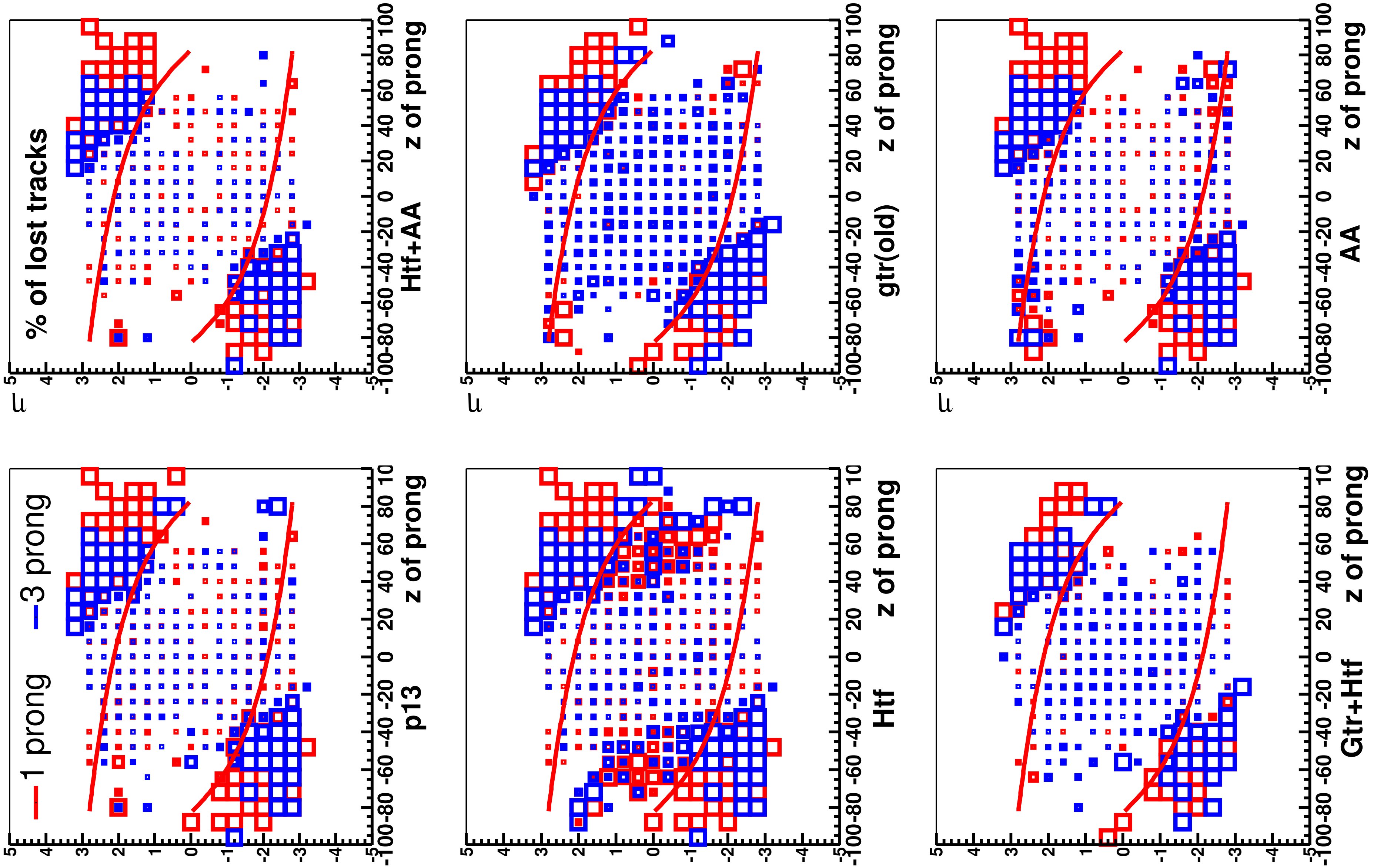
Tracking efficiency versus pT (3 prong)





any algorithm shows improvement over old gtr (p11-tracking)
all combinations with AA show very good efficiency for 3 prongs
p13 sample is similar

Lost tracks in η-Z



Summary

- Efficiencies of p13 tracking greatly improved opver p11
- HTF+AA still better
- 1 prong efficiencies in CFT acc: 98+% from 95%
- 3 prong efficiencies in CFT acc: dropping with pT, total about 98%(?), high pT: about 95%
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