



中国科学院高能物理研究所  
*Institute of High Energy Physics*  
*Chinese Academy of Sciences*

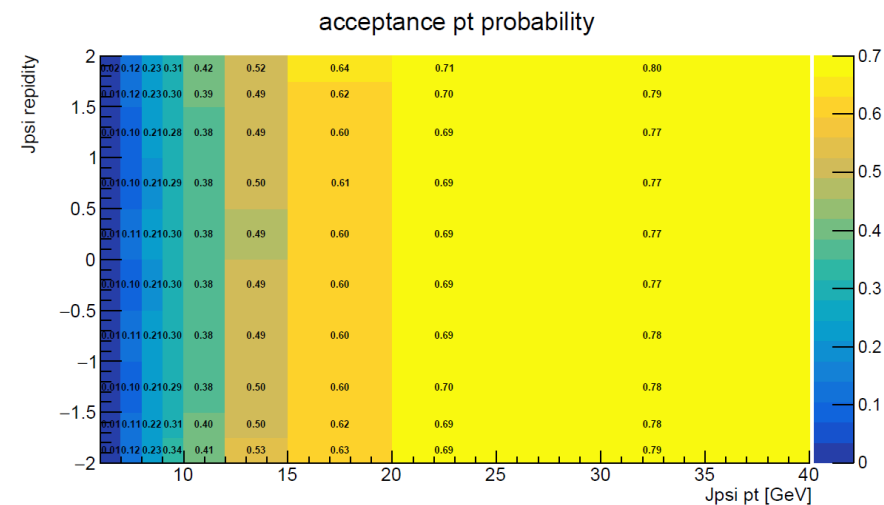
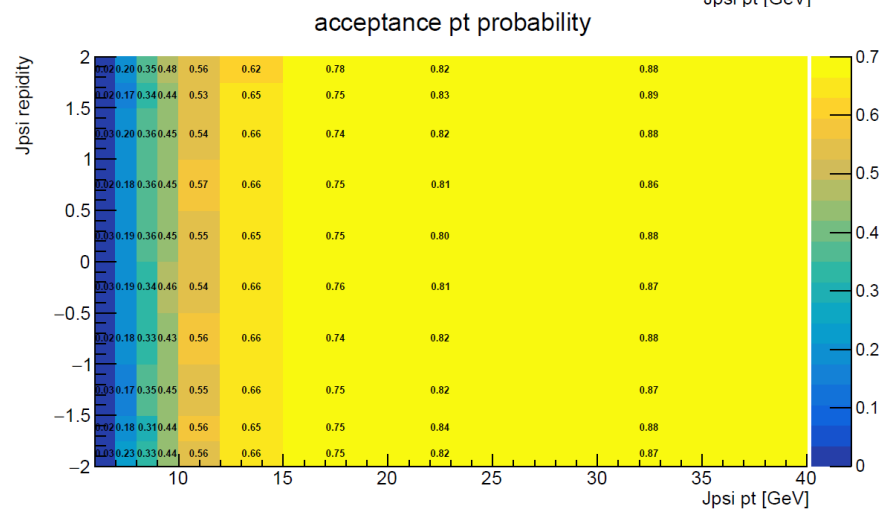
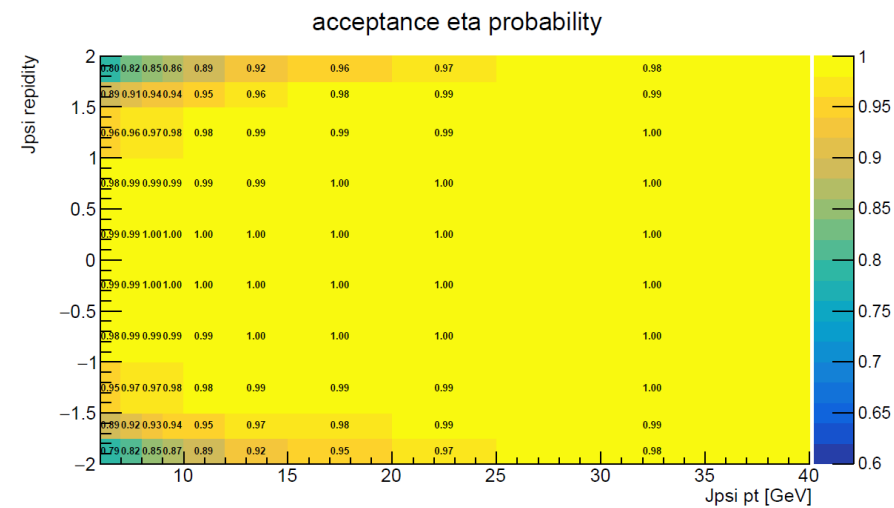
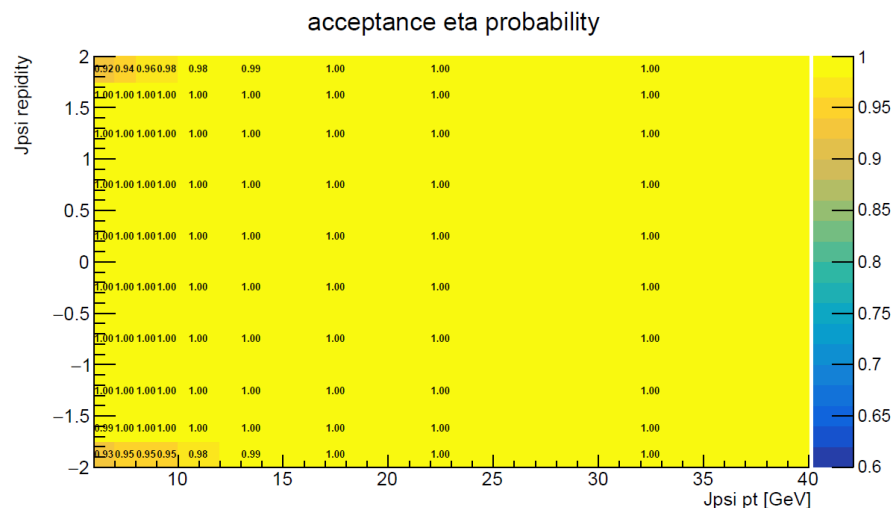


# Closure test

Taozhe Yu, Hongbo Liao

2022.6.23

# SPS Acceptance comparison



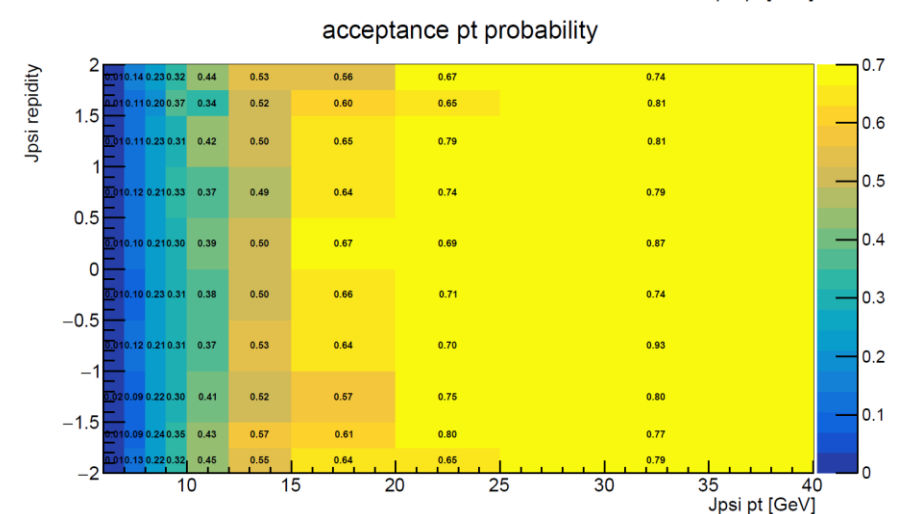
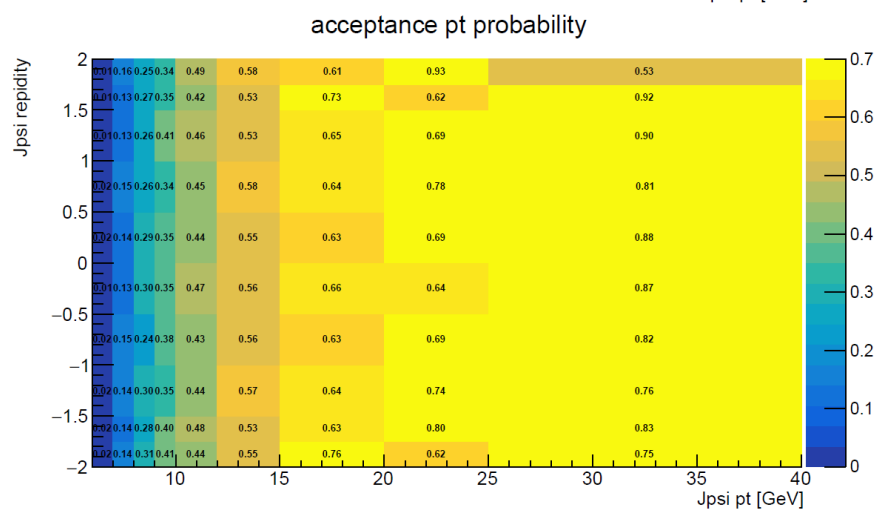
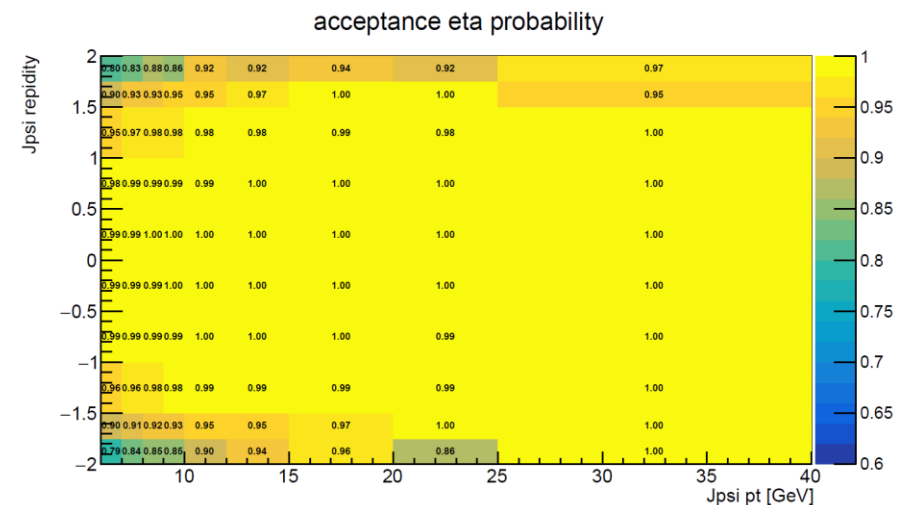
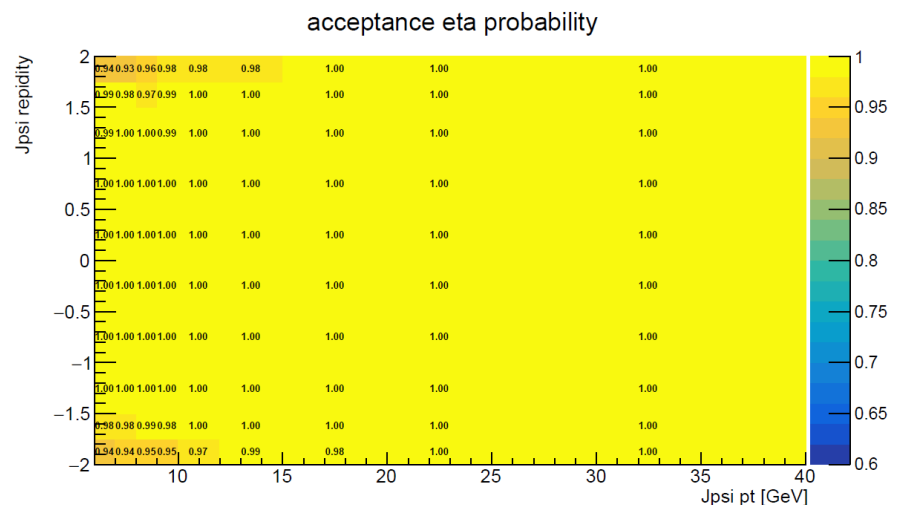
official

private

- The SPS official and private sample acceptance have 20-30% deviation each bin



# DPS Acceptance comparison

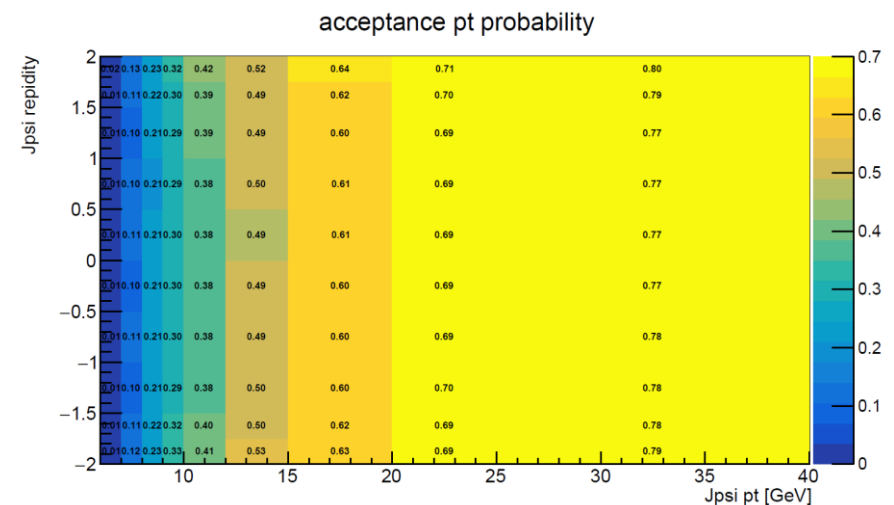
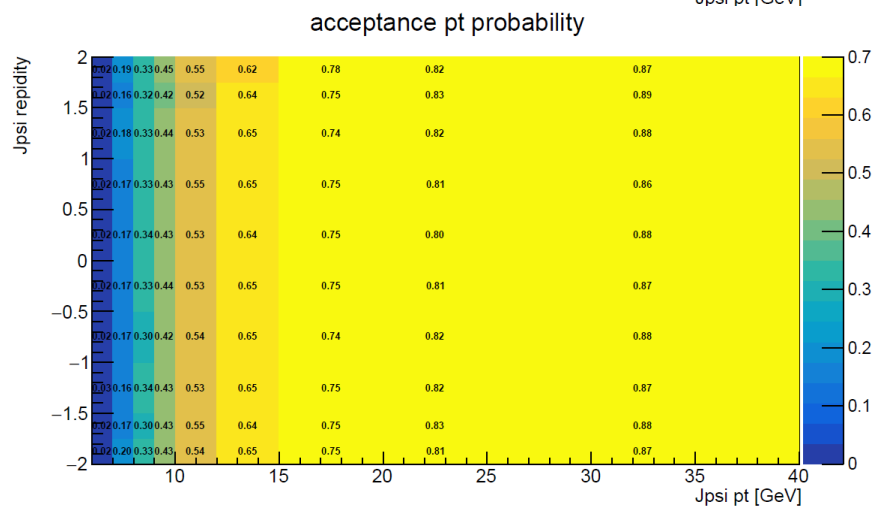
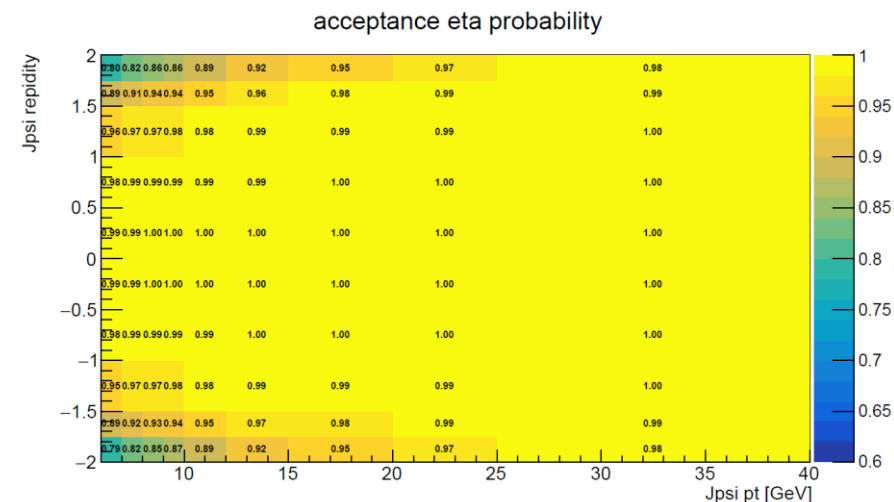
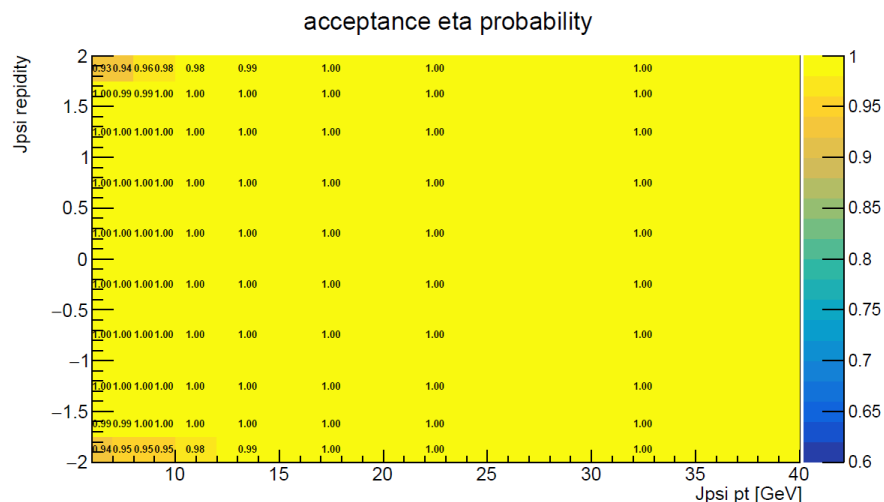


official

private

- The DPS official and private sample acceptance have ~10% deviation each bin

# MIX Acceptance comparison



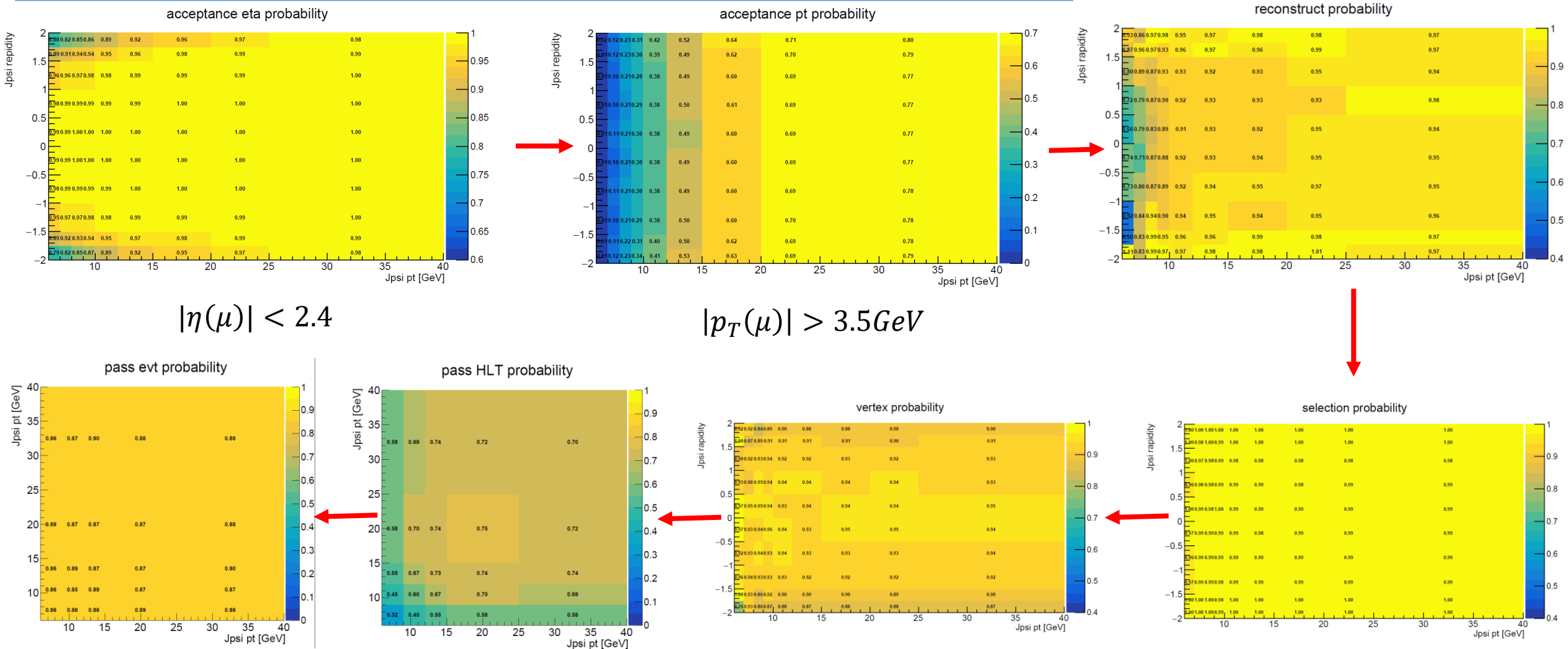
official

private

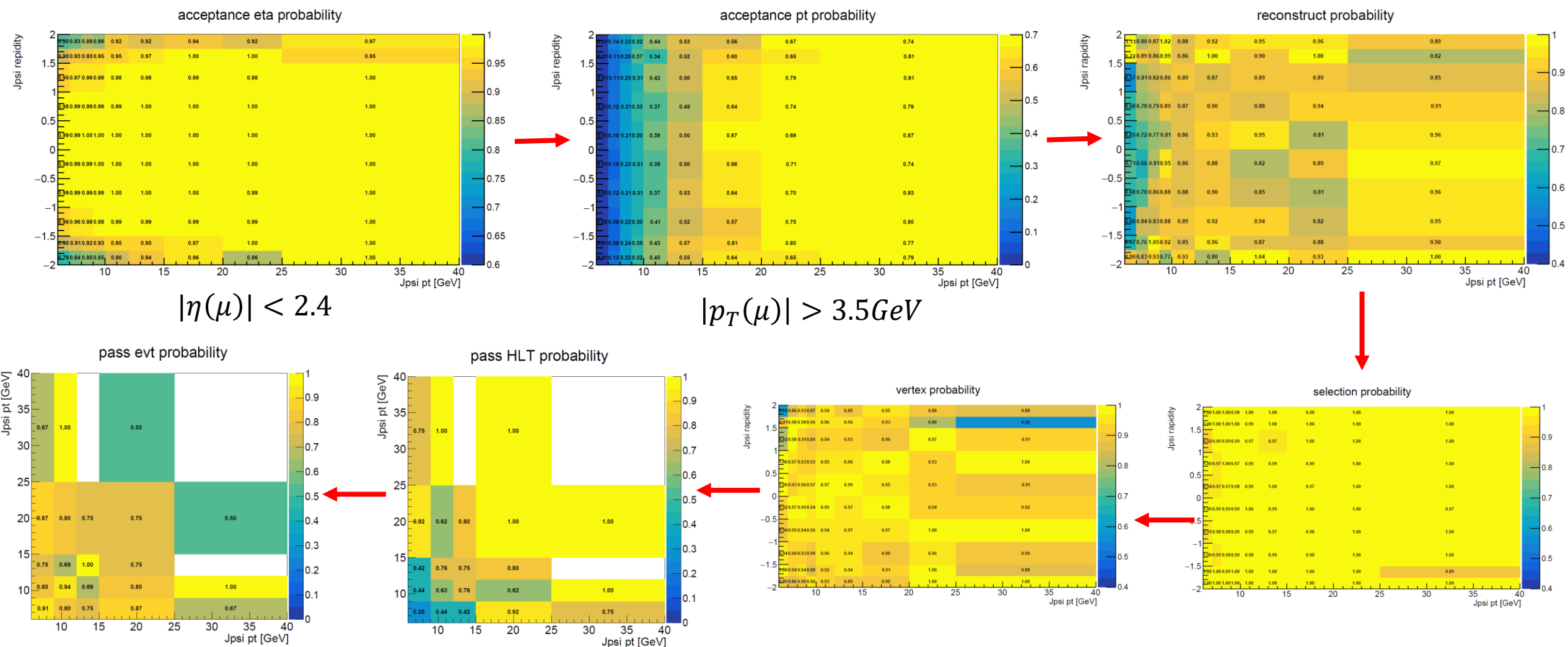
- The MIX official and private sample acceptance have 20-30% deviation each bin



# SPS weights



Use SPS private sample get acceptance weights  
 Use SPS official sample to get efficiency weights

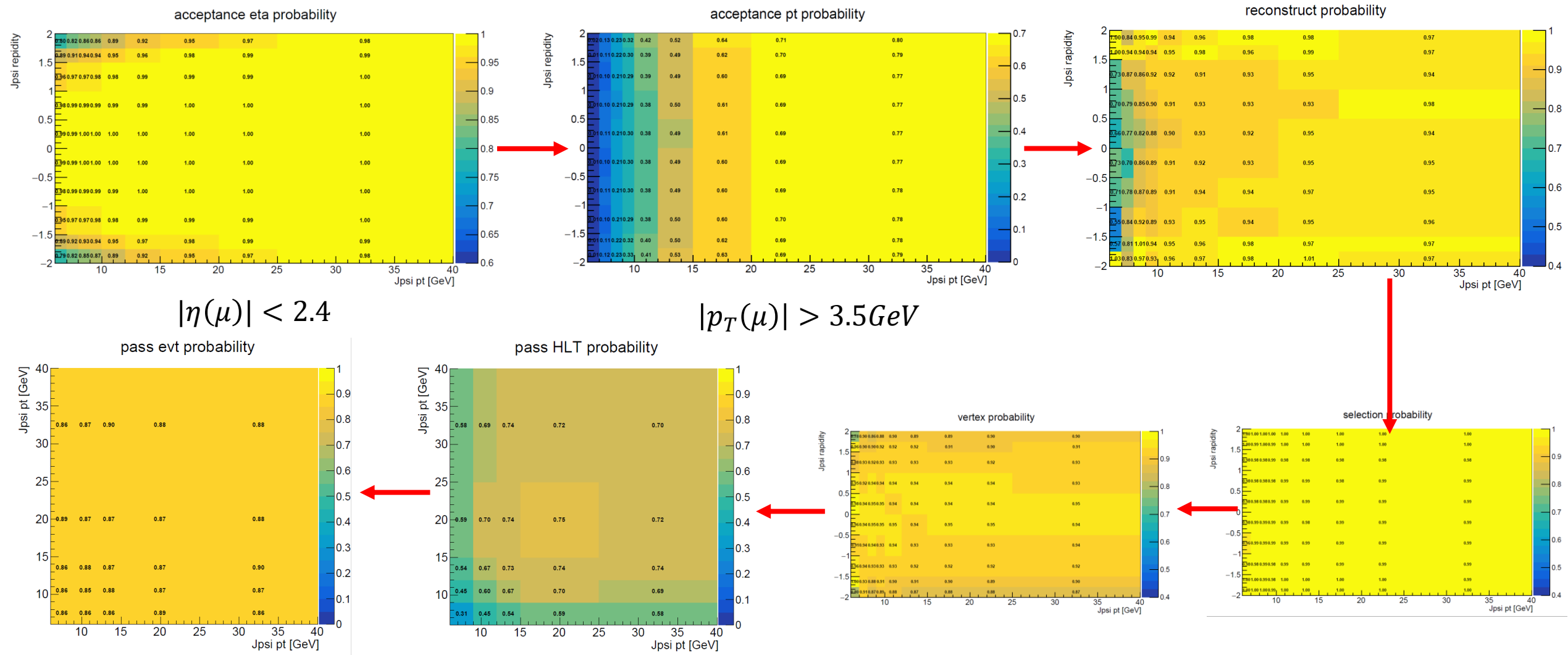


Use DPS private sample get acceptance weights

Use DPS official sample to get efficiency weights



# MIX weights



Use MIX private sample get acceptance weights

Use MIX official sample to get efficiency weights

# Closure test (DPS private sample)



Use DPS private sample to do test

cut	$N_{obs}$	$N_{corr}(DPS)$	$N_{corr}(SPS)$	$N_{corr}(Mix)$
$ \eta(\mu)  < 2.4$	2197	$2201.1 \pm 115.3$	$2196.6 \pm 33.5$	$2197.1 \pm 31.3$
$ p_T(\mu)  > 3.5$	118	$126.8 \pm 21.0$	$117.6 \pm 3.3$	$118.0 \pm 3.2$
$reco.(\mu)$	110	$110.7 \pm 33.6$	$102.3 \pm 7.4$	$102.5 \pm 6.8$
$id.(\mu)$	104	$108.6 \pm 43.0$	$100.3 \pm 9.9$	$100.4 \pm 9.1$
$vtx(\mu\mu)$	83	$96.8 \pm 45.6$	$85.7 \pm 10.3$	$86.0 \pm 9.5$
$HLT$	60	$73.0 \pm 63.2$	$54.8 \pm 6.6$	$55.1 \pm 6.3$
$4 \mu cut$	52	$56.3 \pm 61.3$	$48.0 \pm 6.4$	$48.2 \pm 6.1$

- The DPS weights error are big
- Observed events and corrected events have good agreement

# Closure test (SPS private sample)



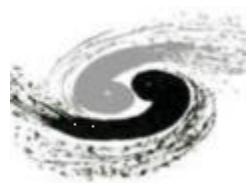
Use SPS private sample to do test

cut	$N_{obs}$	$N_{corr}(DPS)$	$N_{corr}(SPS)$	$N_{corr}(Mix)$
$ \eta(\mu)  < 2.4$	394844	$394514 \pm 40222$	$394696 \pm 6190$	$394717 \pm 5973$
$ p_T(\mu)  > 3.5$	75251	$81903 \pm 18613$	$75619 \pm 1974$	$75776 \pm 1941$
$reco.(\mu)$	66964	$75576 \pm 28854$	$68178 \pm 3924$	$68321 \pm 3779$
$id.(\mu)$	65756	$74173 \pm 36255$	$66816 \pm 5188$	$66950 \pm 4983$
$vtx(\mu\mu)$	53772	$65585 \pm 37371$	$57180 \pm 5349$	$57428 \pm 5146$
$HLT$	40733	$57159 \pm 59898$	$39898 \pm 3992$	$40079 \pm 3882$
$4 \mu cut$	36320	$43496 \pm 56847$	$35053 \pm 3850$	$35201 \pm 3761$

- The DPS weights error are big
- Observed events and corrected events have good agreement



# DPS Gen level root file



- The 100,000,000 events Gen level root files are ready
- The Gen level files Ntuples also ready.