

Study of Strangeness Production in Underlying Event at 7 TeV



Tomas Hreus, Pascal Vanlaer

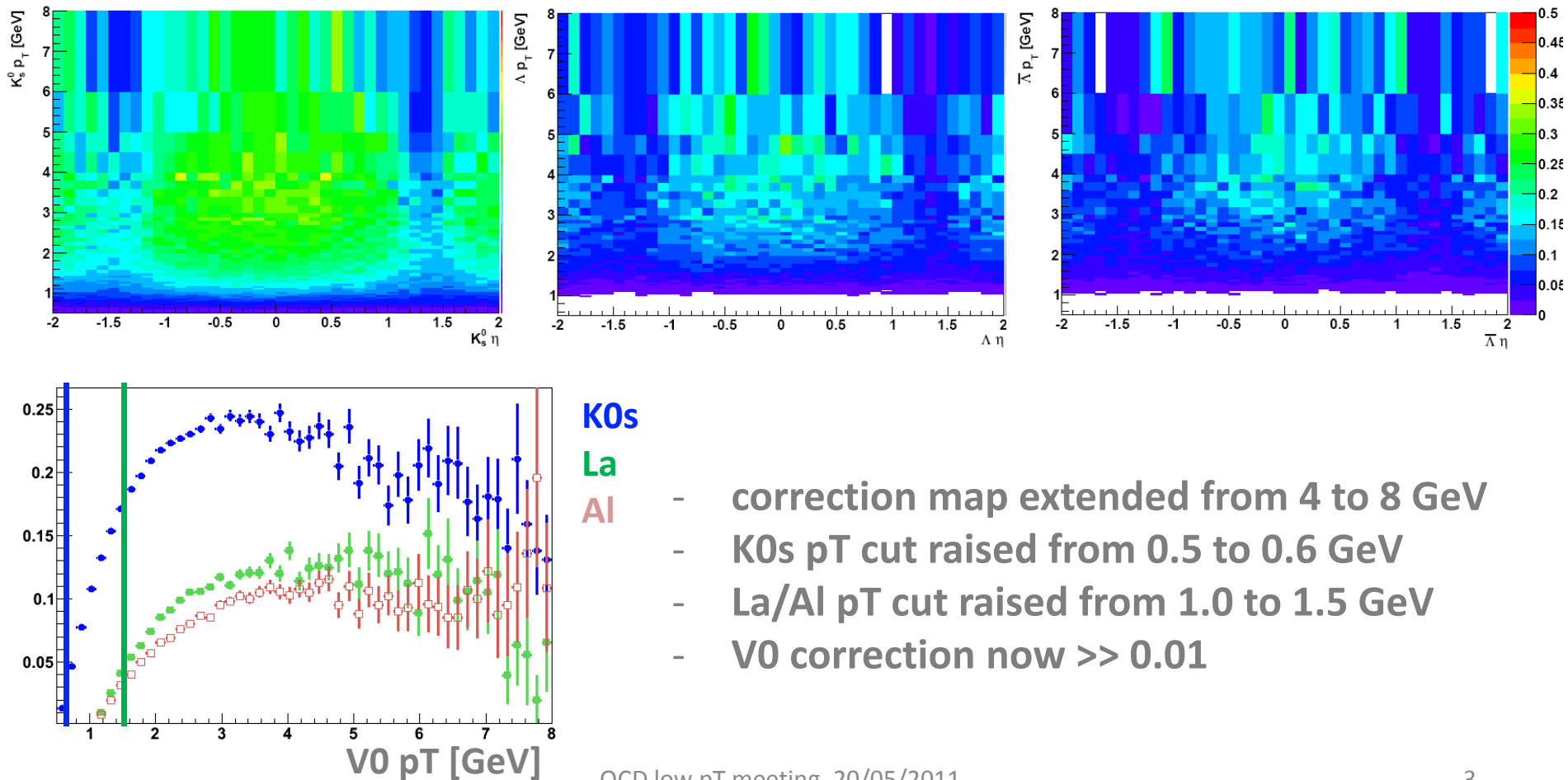
Overview

- ❑ V0 correction: refined pT cuts
- ❑ TrackJet pT-correction
- ❑ Closure tests: P6D6T, P6Z1, P8 tunes
- ❑ Systematic from V0 correction
- ❑ Rates

V0 Correction

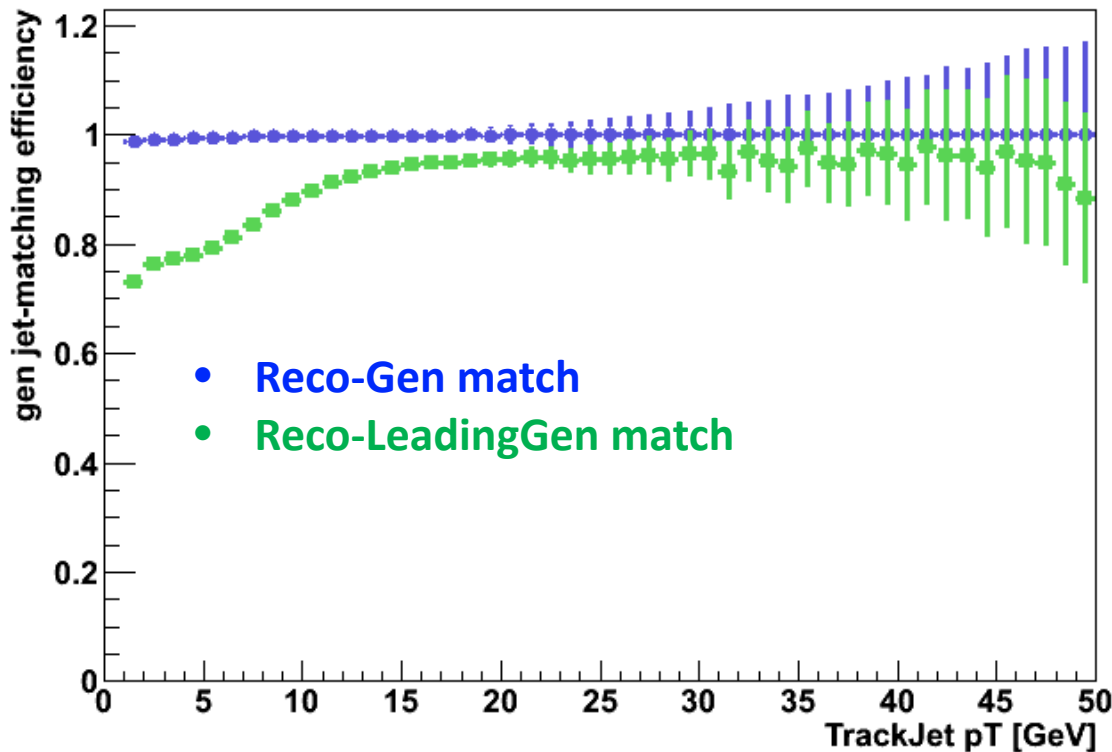
V0 Correction = $1 / (\text{acceptance} \times \text{efficiency})$

- computed using Pythia6 D6T tune (highest stats)



TrackJet-Pt Correction (I)

- Reconstructed GenChargedJet
 - stable charged particles with $p_T > 0.5$ GeV and $|\eta| < 3.0$
 - unstable particles explicitly removed from clustering
 - anti-kt algorithm ($R = 0.5$)
- match closest gen jet in $R(\Delta\eta\Delta\phi) < 0.3$ to reco trackjet

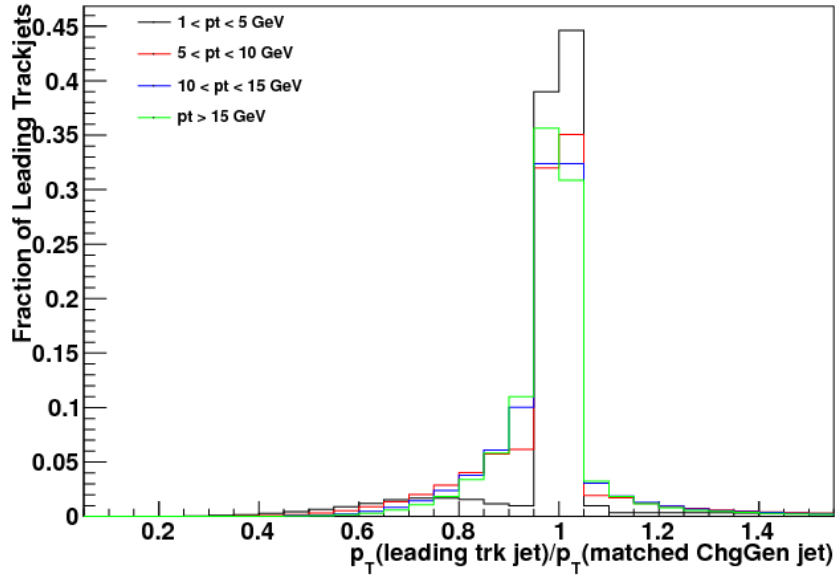


Matching performance

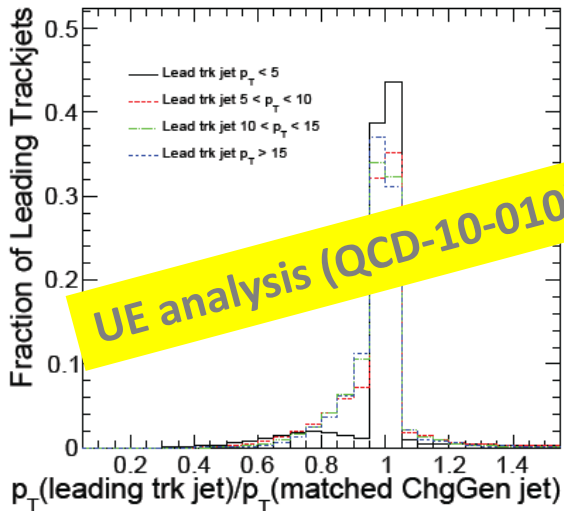
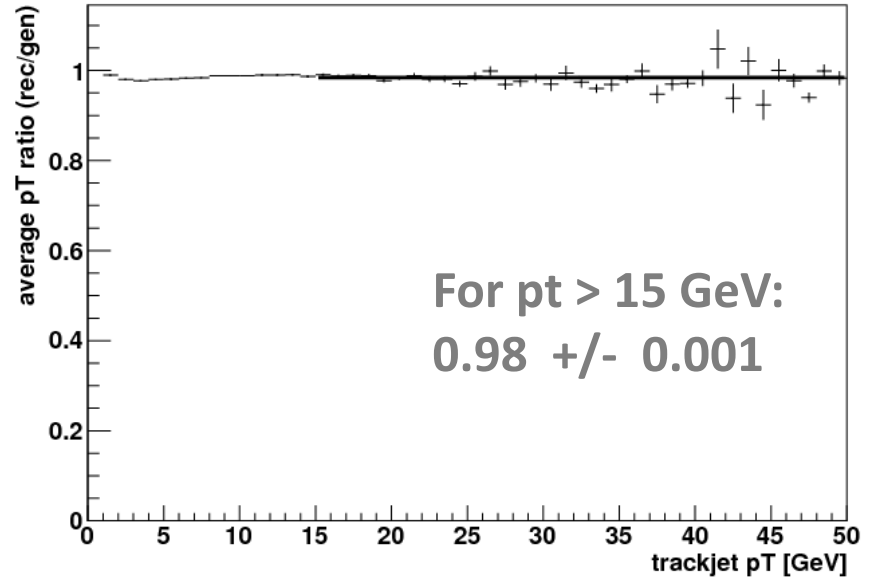
- jets matched in 98%
- matched to gen leading jet $> 75\%$ for low TrackJet pT

TrackJet-Pt Correction (II)

pT ratio



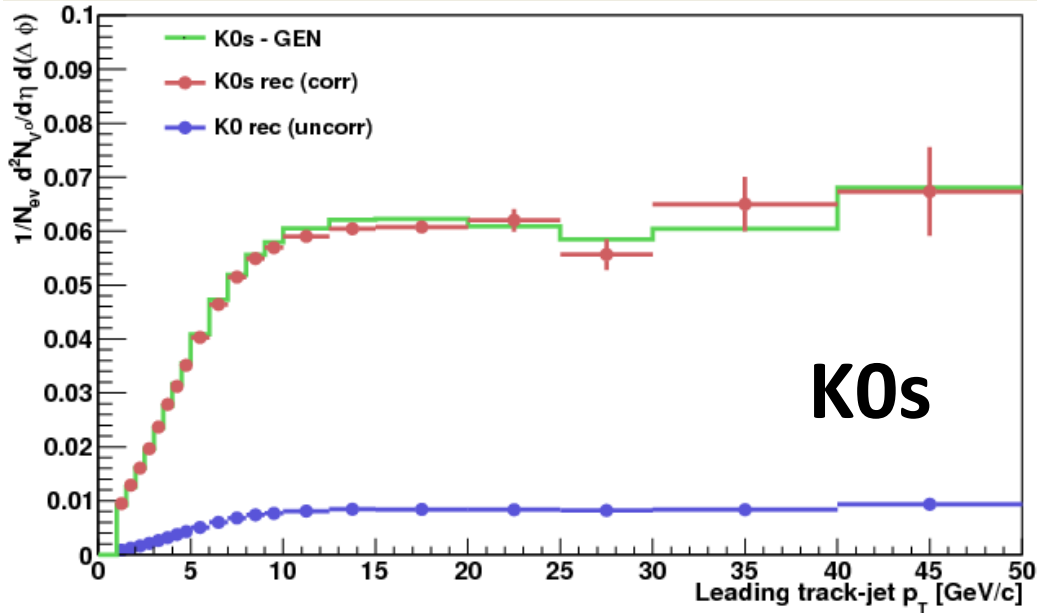
pT correction



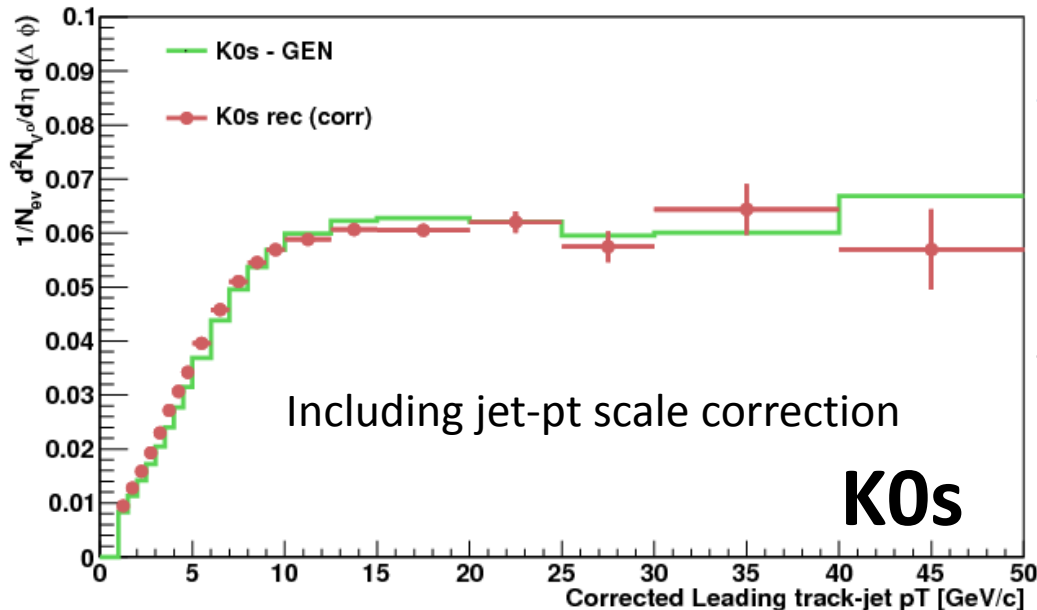
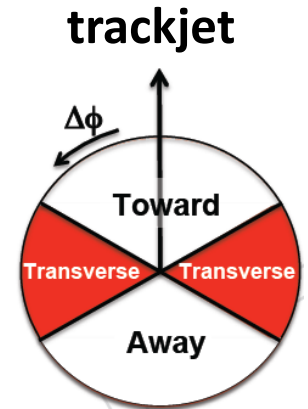
UE analysis (QCD-10-010)

Using constant correction for p_T > 15 GeV

Closure Test K0s: Pythia6-D6T

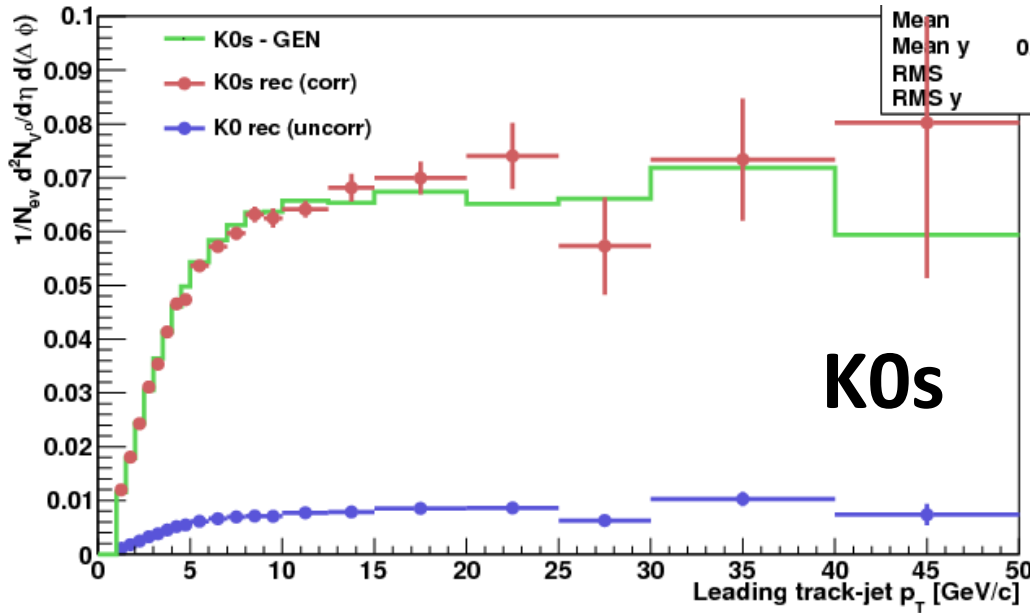


- V0 correction taken from D6T
- Gen rates: transverse region wrt reco trackjet
- test V0 correction



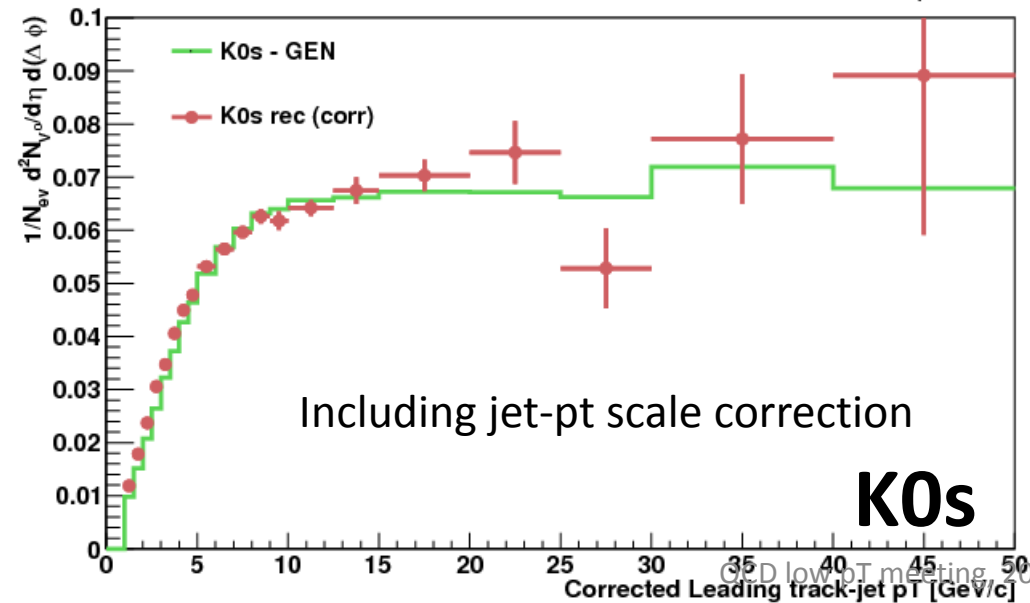
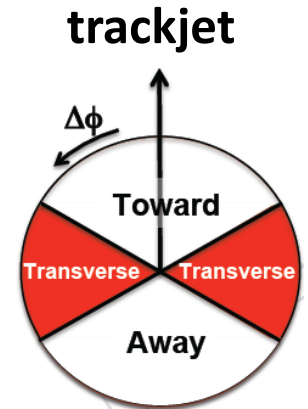
- Gen rates: activity in the transverse region wrt gen leading trackjet
- Reco jet is pt corrected

K0s Closure Test: Pythia6-TuneZ1



V0 correction taken from D6T
 Gen rates: transverse region wrt reco trackjet

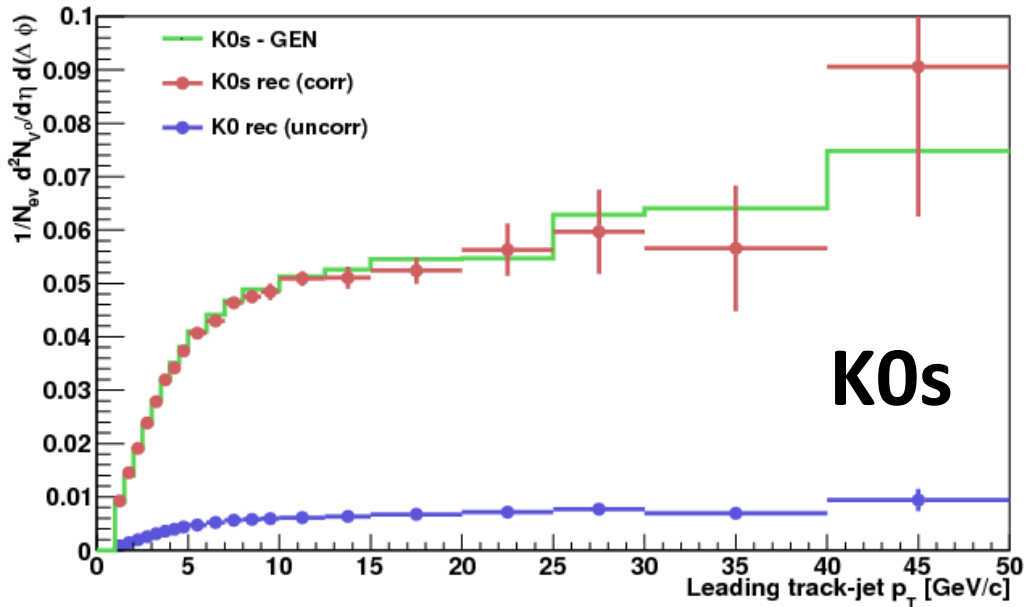
- test V0 correction



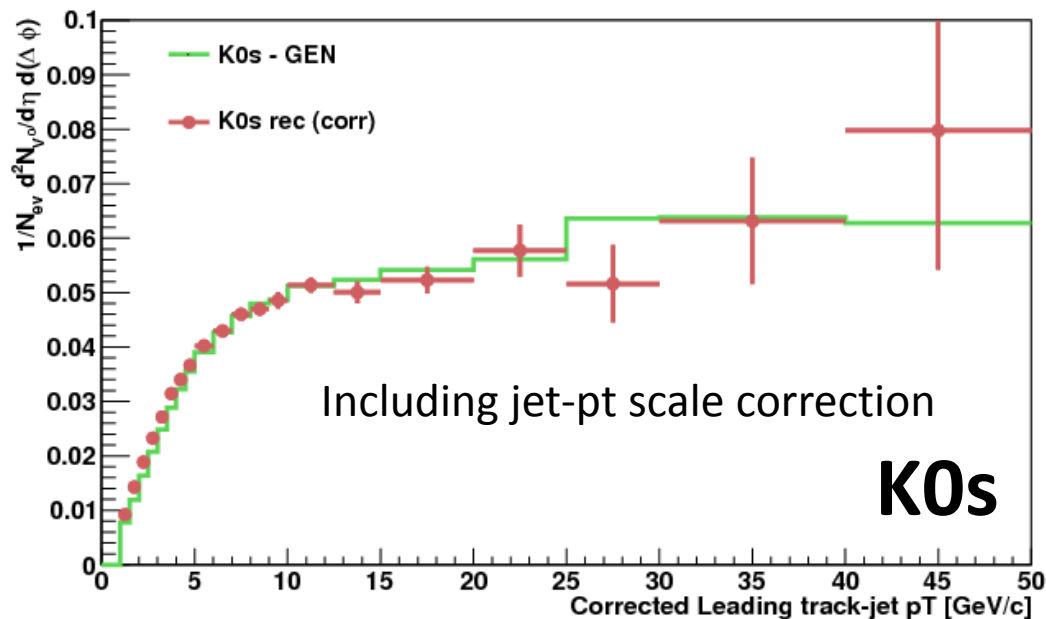
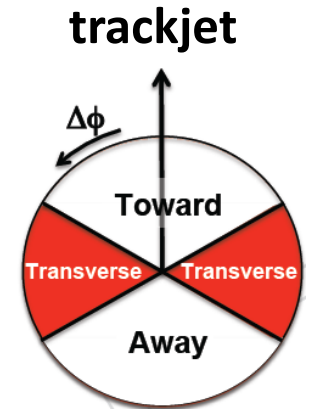
- Gen rates: activity in the transverse region wrt gen leading trackjet

- Reco jet is pt corrected

K0s Closure Test: Pythia8



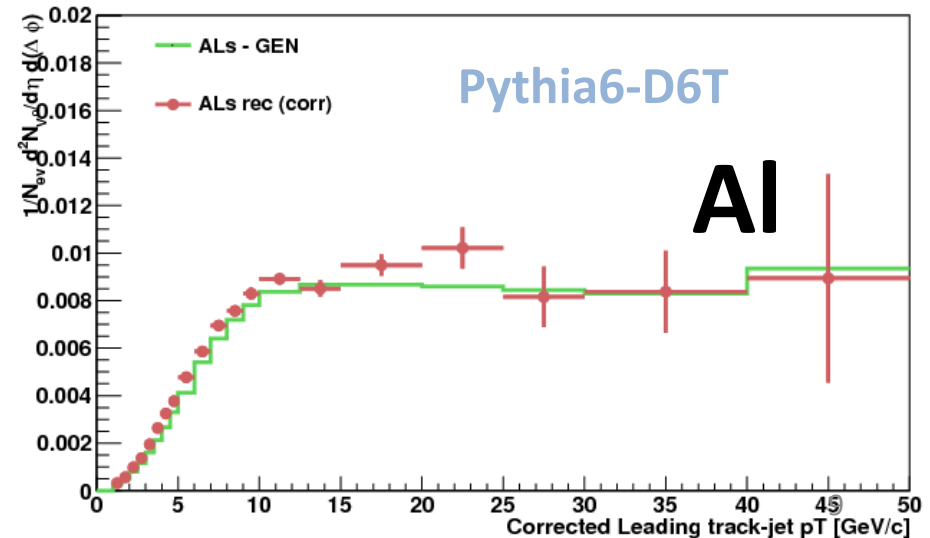
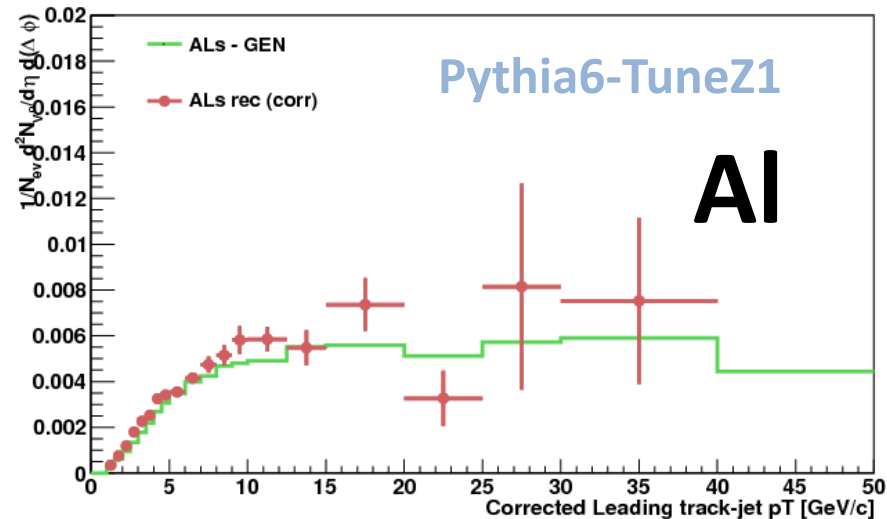
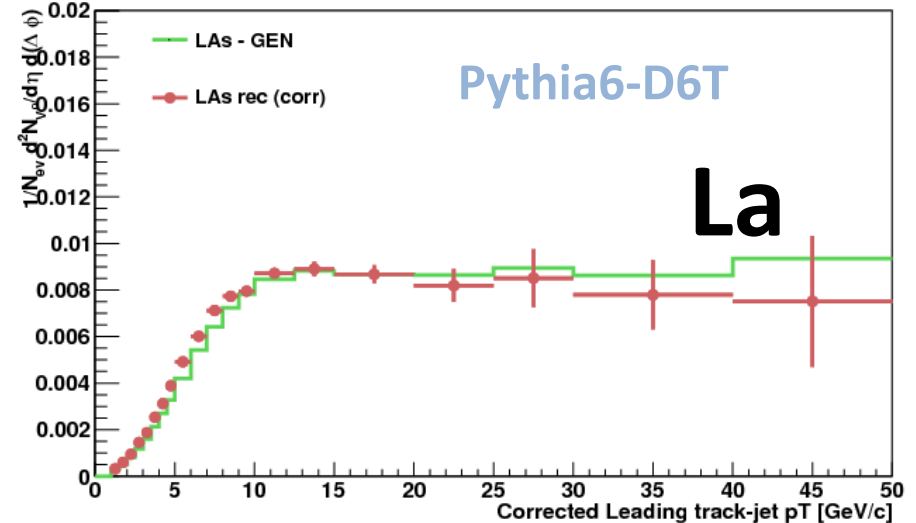
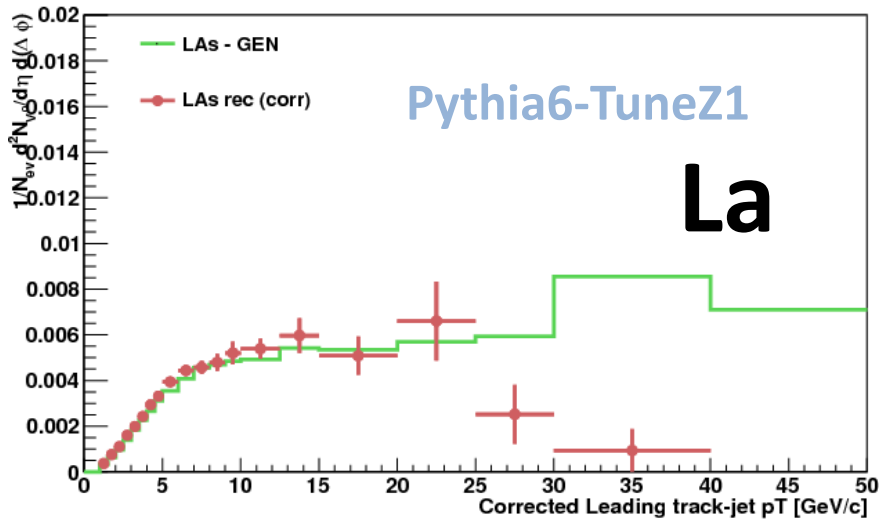
- V0 correction taken from D6T
- Gen rates: transverse region wrt reco trackjet
- test V0 correction



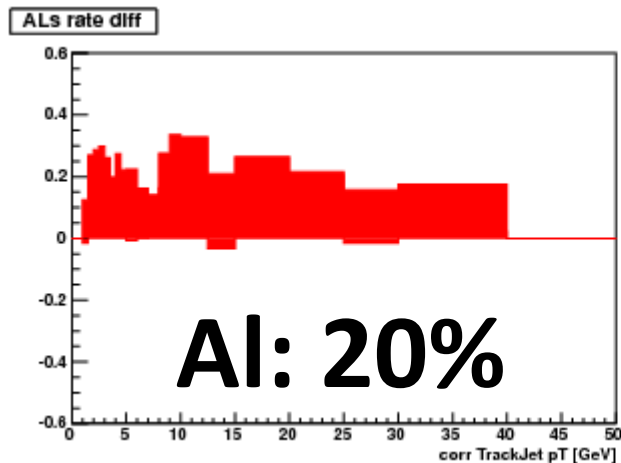
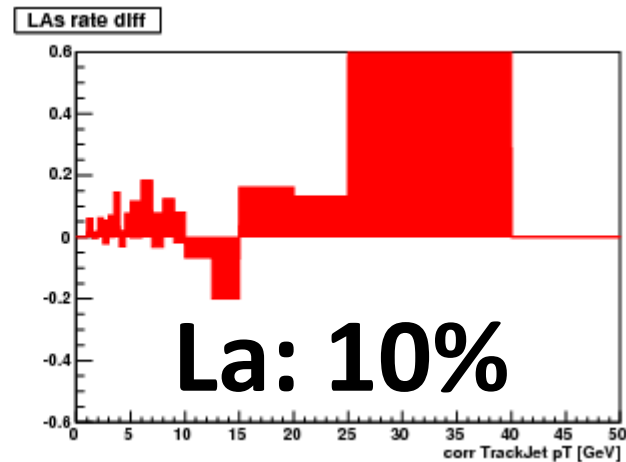
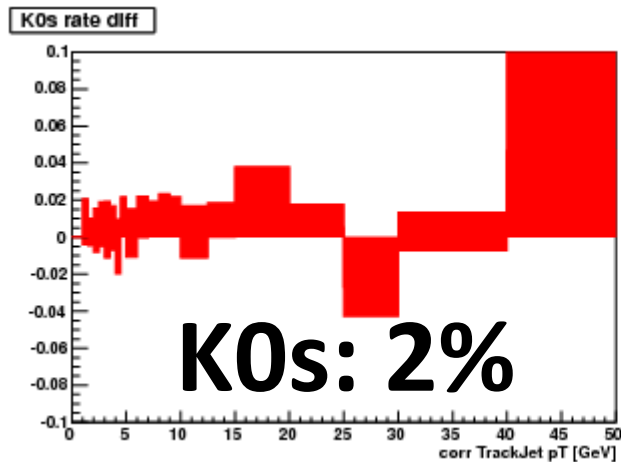
- Gen rates: activity in the transverse region wrt gen leading trackjet
- Reco jet is pt corrected

Lambda Closure Test

using V0 correction from D6T ; jet-pt scale correction included



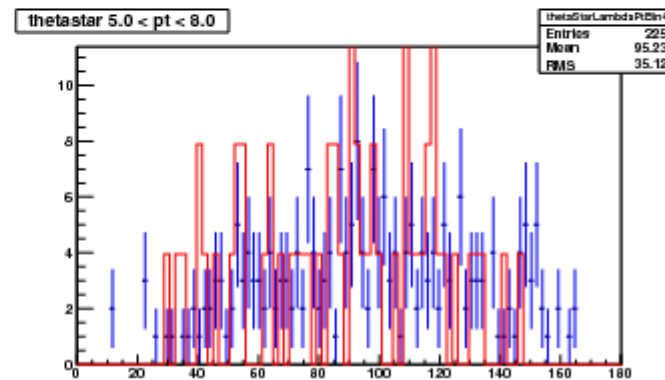
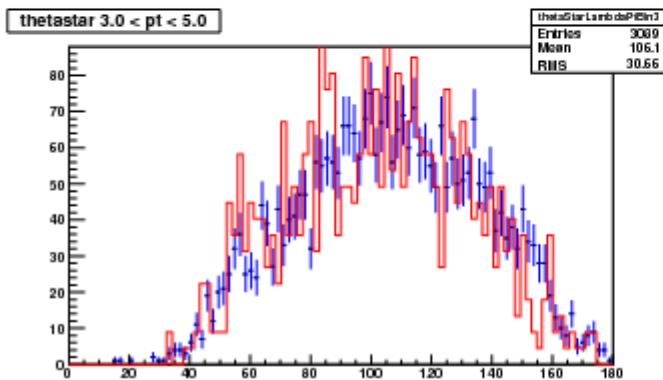
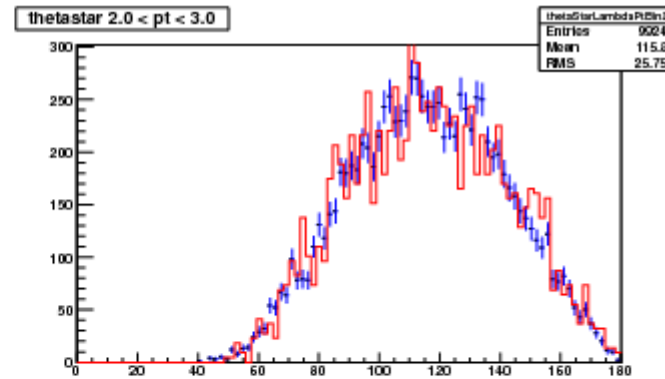
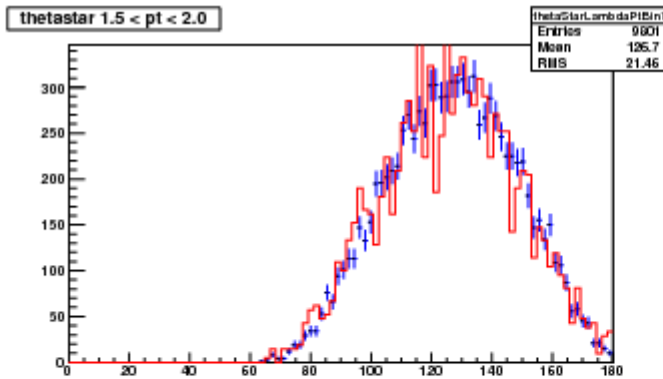
V0 Correction Systematics



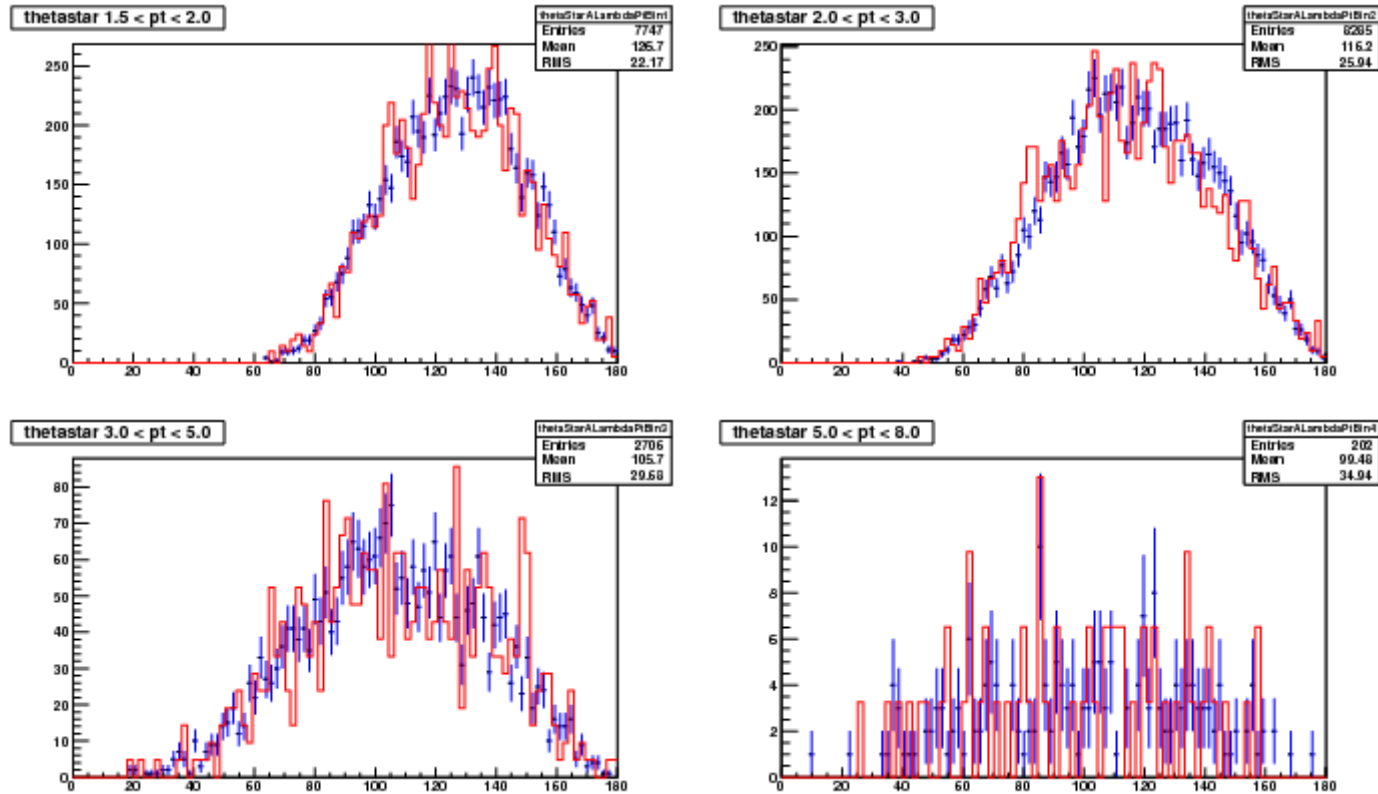
- syst estimated from difference in rates obtained using V0 corrections from D6T, Z1 and Pythia8 MC samples

- ideally apply bin-by-bin, but due to stat limitations, using **fixed uncertainties**

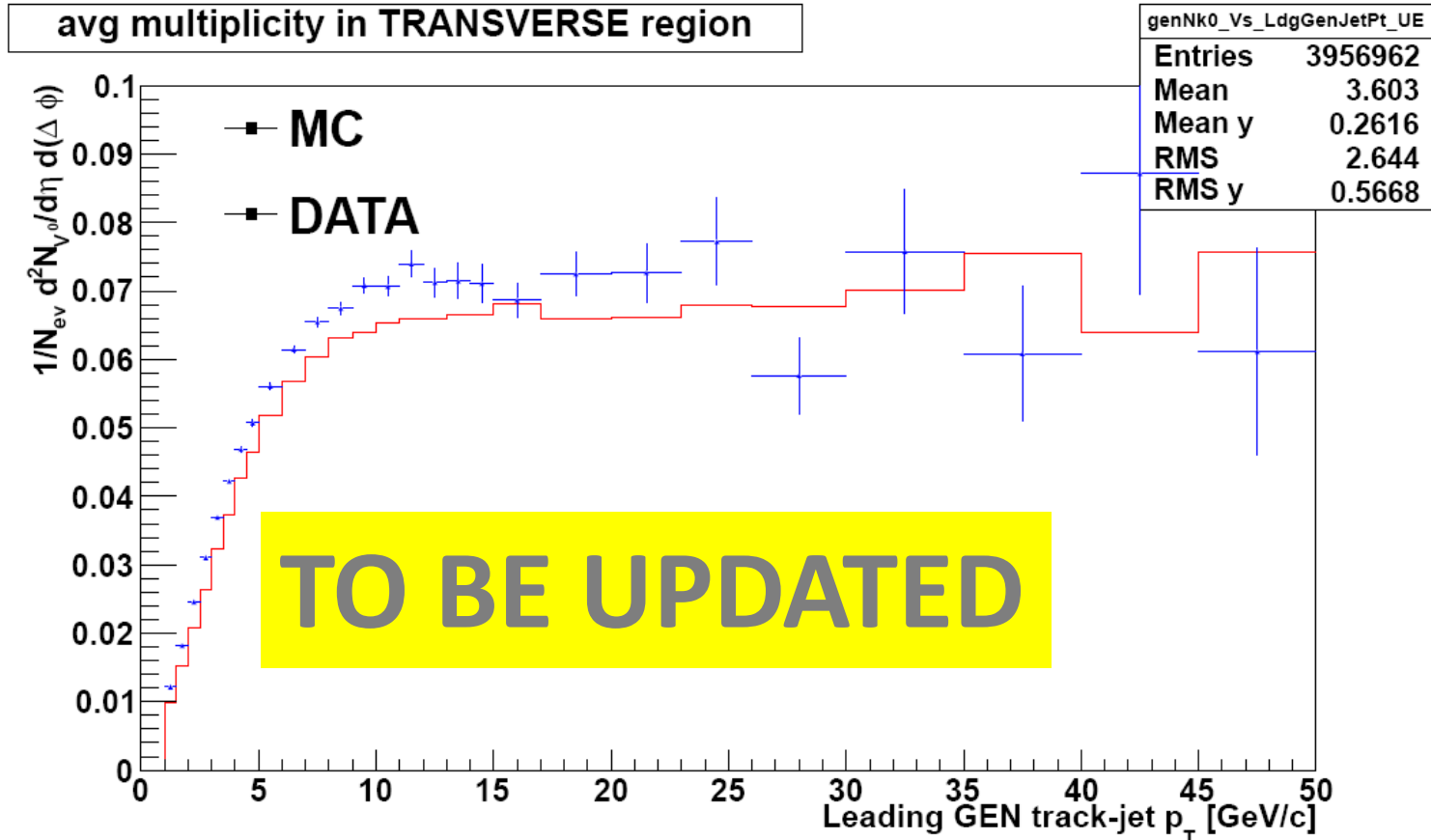
ThetaStar: Lambda



ThetaStar: AntiLambda

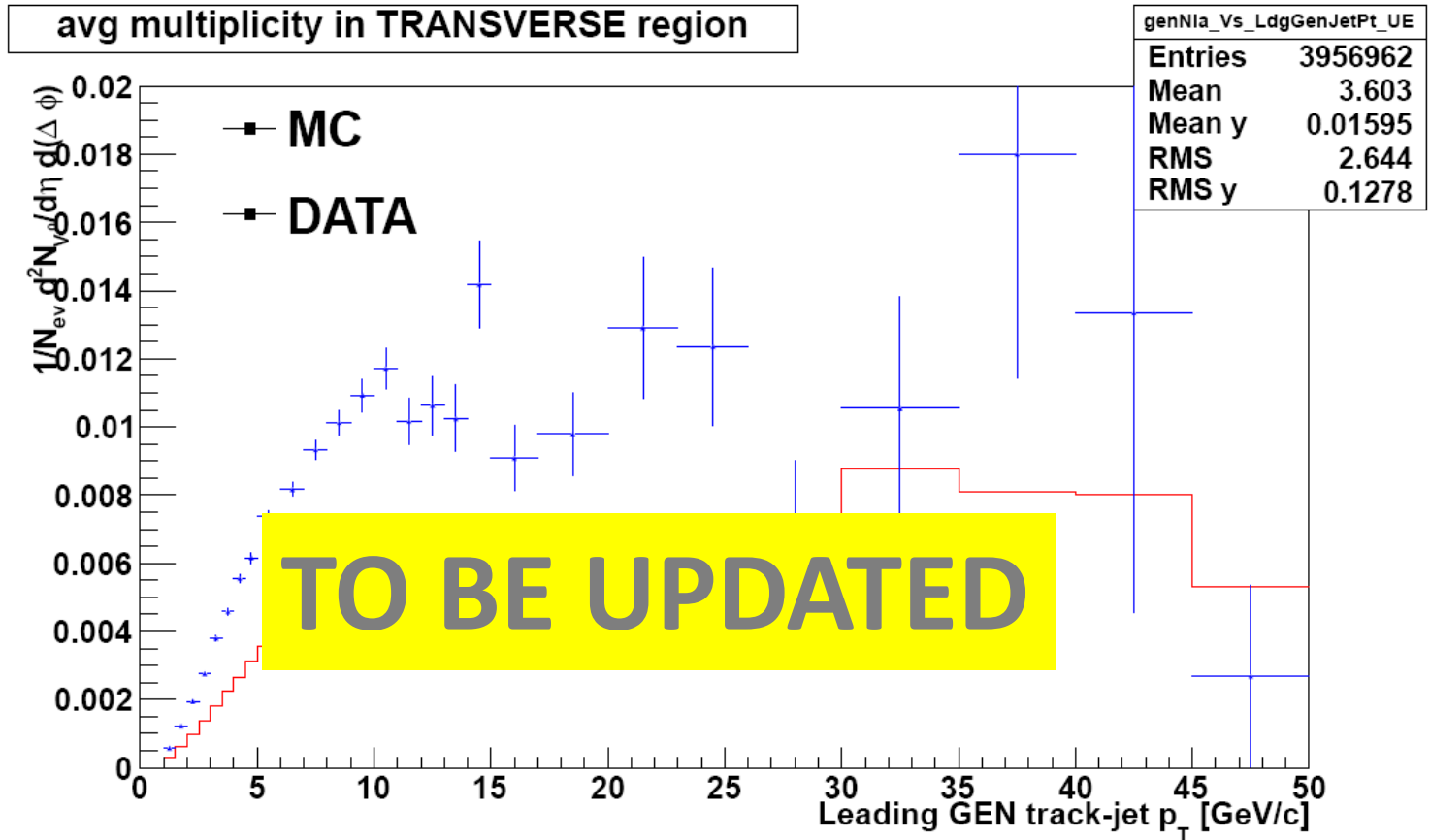


Rates K0s

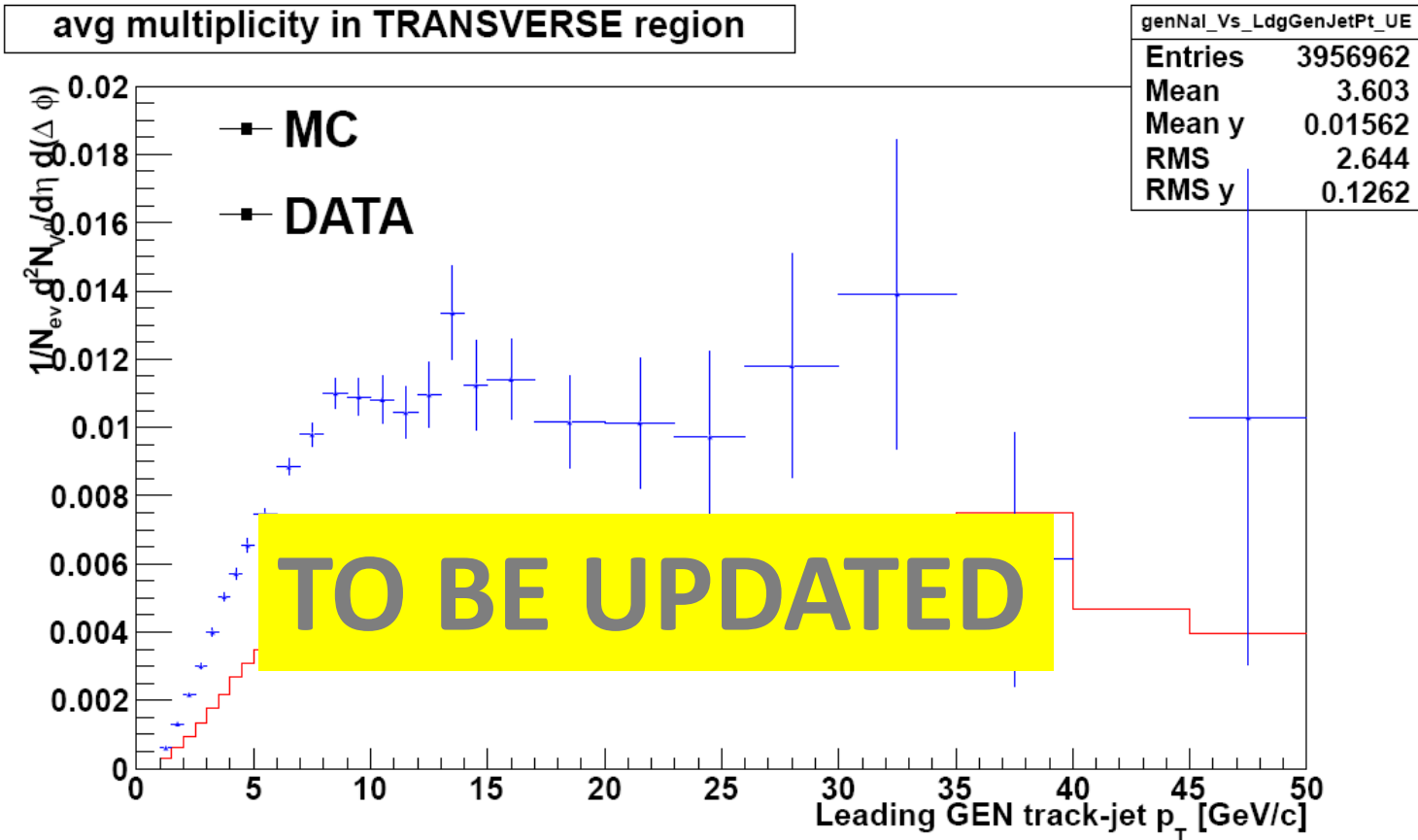


- V0 correction and jet-pt correction applied
- corrected for background (bin-by-bin basis)
- Jet-pt correction to hadron level

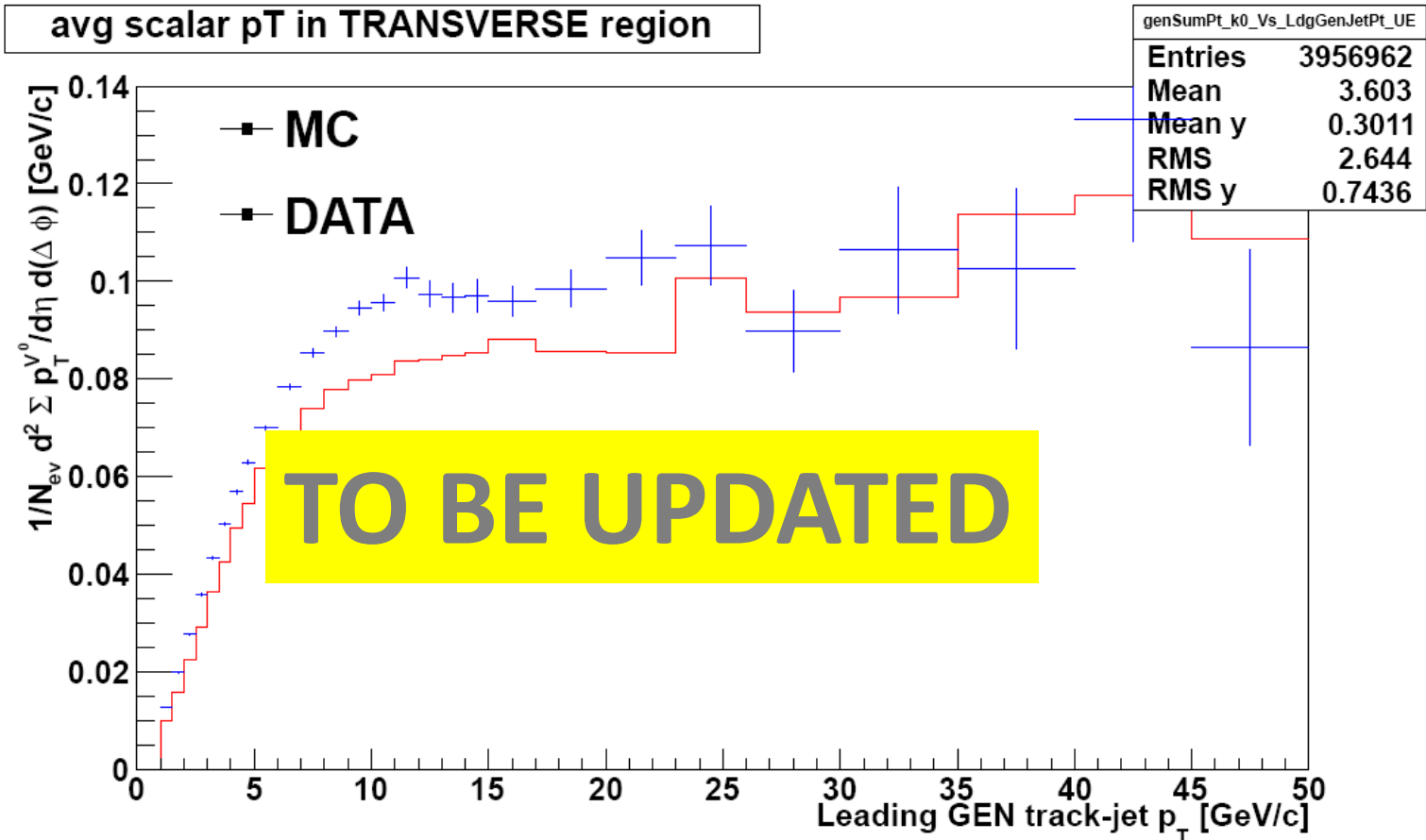
Rates Lambda



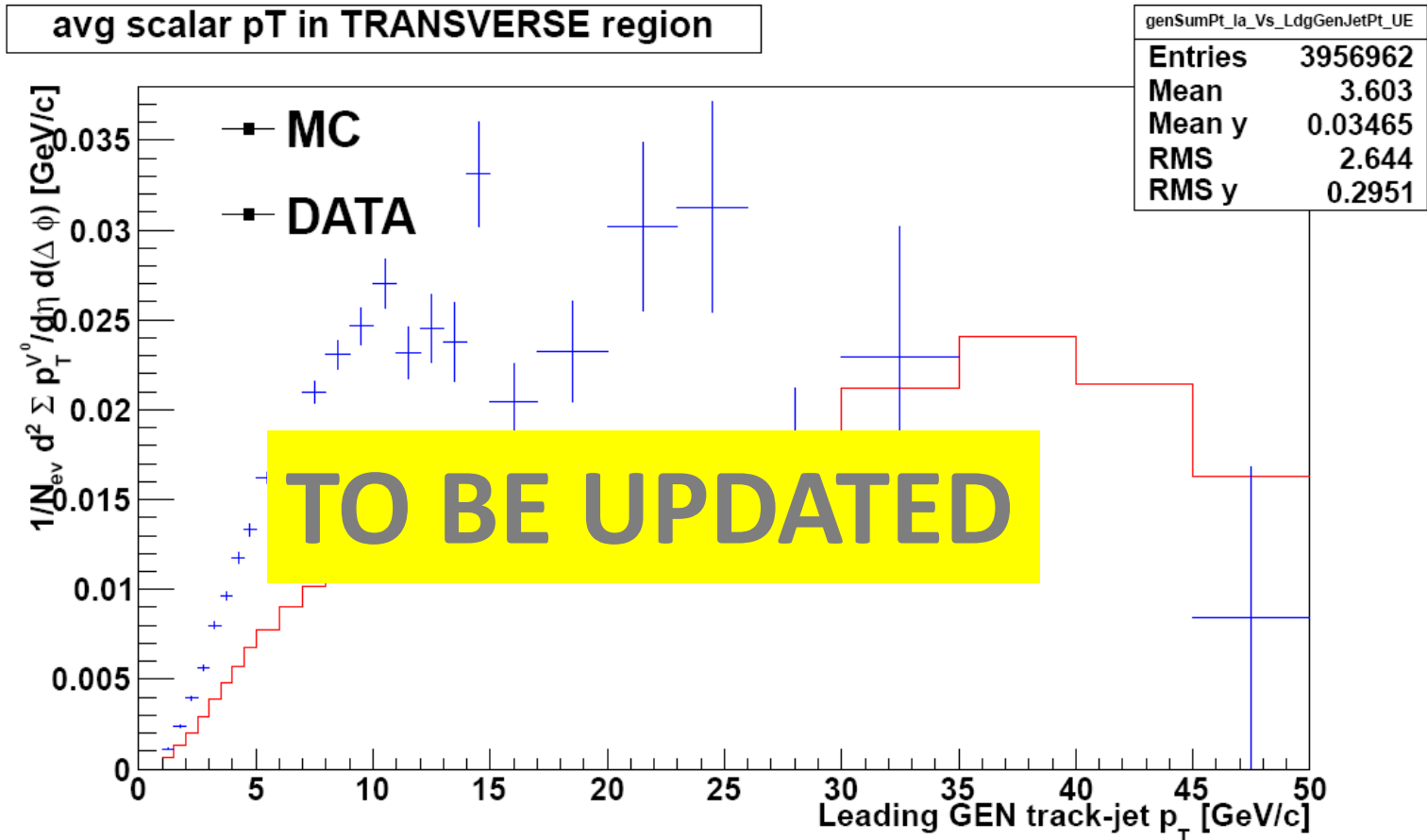
Rates AntiLambda



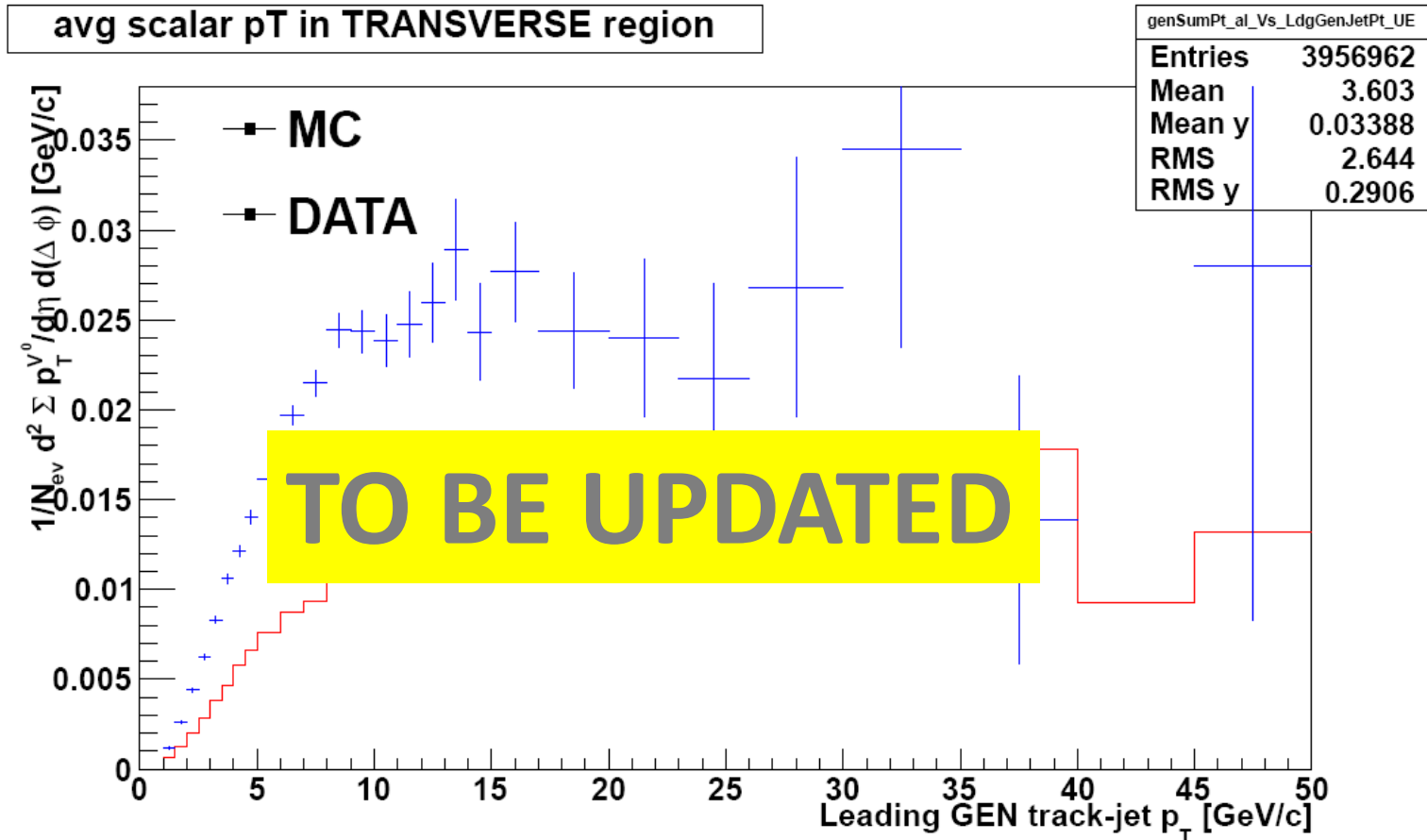
Scalar pT Sum K0s



Scalar pT Sum Lambda



Scalar pT Sum AntiLambda



Conclusion & Plans

Backup