

Analysis Train Update

V. Riabov

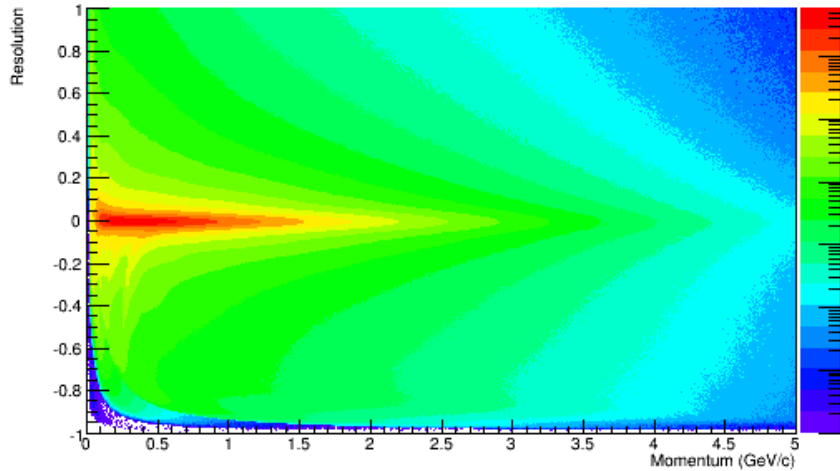
Analysis Train

- Analysis train: mpdroot/physics
- Recent updates:
 - ✓ mpdroot/core/mpdBase/MpdTrack.h to add extra variables for a track
 - ✓ mpdroot/physics/evPID wagon to fill values of new variables
- New variables for a track:
 - ✓ `TVector3 mom3 = mpdtrack->GetMomConstr();` // PV-constrained track momentum
// available for tracks with $|DCA| < 20$ cm
 - ✓ `TVector3 mom3 = mpdtrack->GetMomK();` // Track refit for a kaon
// available for tracks with 5σ TPC-PID as kaon
 - ✓ `TVector3 mom3 = mpdtrack->GetMomP();` // Track refit for a proton
// available for tracks with 5σ TPC-PID as proton
 - ✓ `TVector3 mom3 = mpdtrack->GetMomConstrK();` // Track refit for a kaon + PV-constrained
// available for tracks with 5σ TPC-PID as kaon + $|DCA| < 20$
 - ✓ `TVector3 mom3 = mpdtrack->GetMomConstrP();` // Track refit for a proton + PV-constrained
// available for tracks with 5σ TPC-PID as proton + $|DCA| < 20$

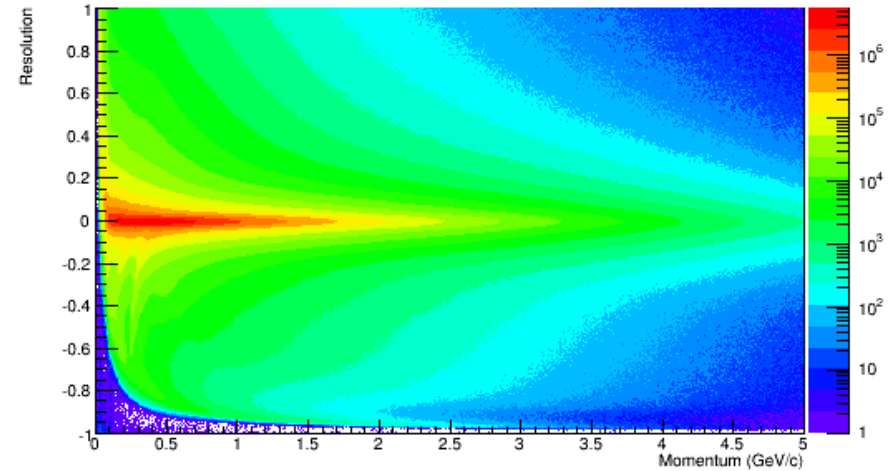
Momentum resolution for different options

- Request 25, [BiBi@9.2](#), UrQMD + Geant4
- Tracks: $|DCA| < 20$, $\sigma = (p_{\text{rec}} - p_{\text{gen}}) / p_{\text{gen}}$

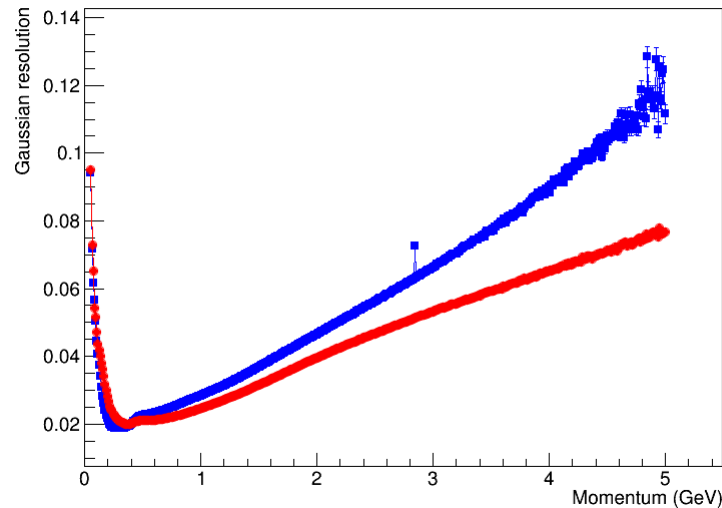
Momentum resolution (default)



Momentum resolution (PV-constrained)



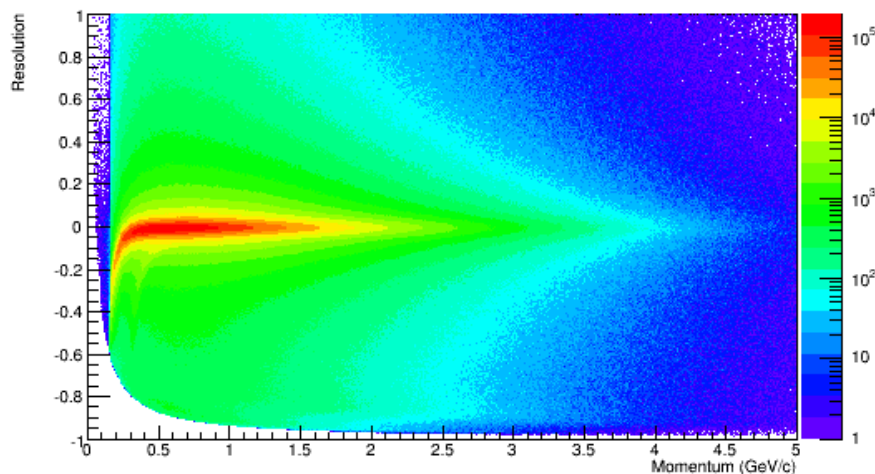
Momentum resolution



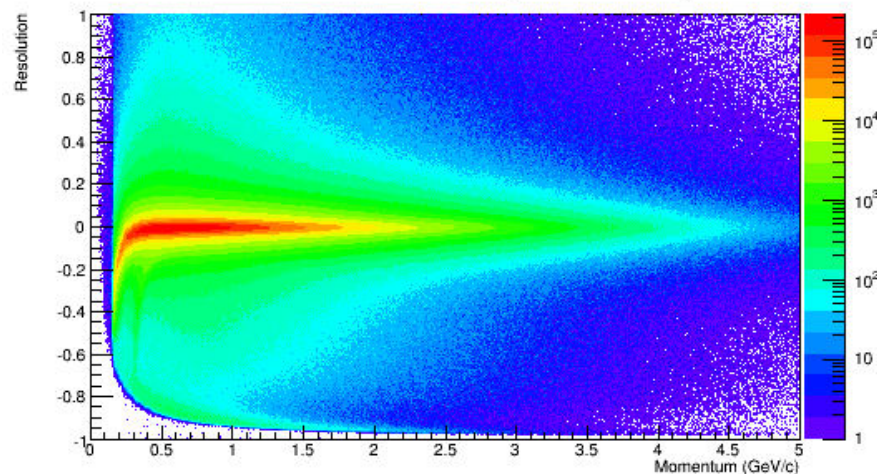
K^\pm : Momentum resolution for different options

- Request 25, [BiBi@9.2](#), UrQMD + Geant4
- Tracks: $|DCA| < 20$; 5σ K-ID by TPC, $\sigma = (p_{\text{rec}} - p_{\text{gen}}) / p_{\text{gen}}$

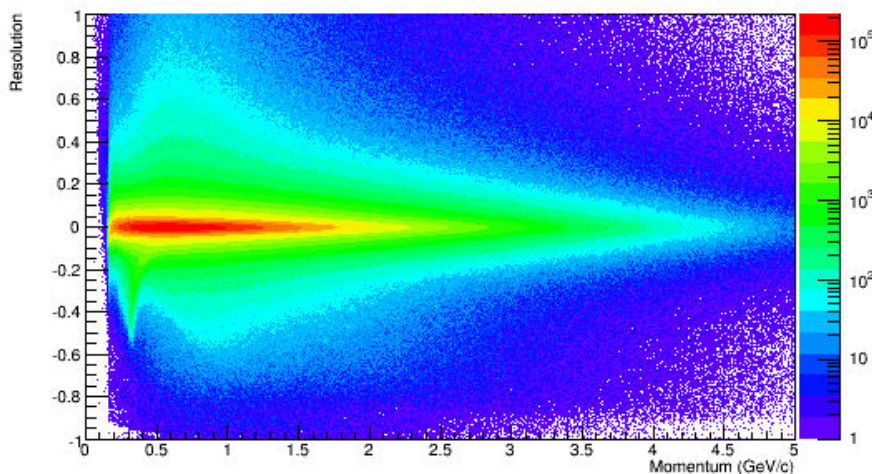
Kaon momentum resolution (default)



Kaon momentum resolution (PV-constrained)



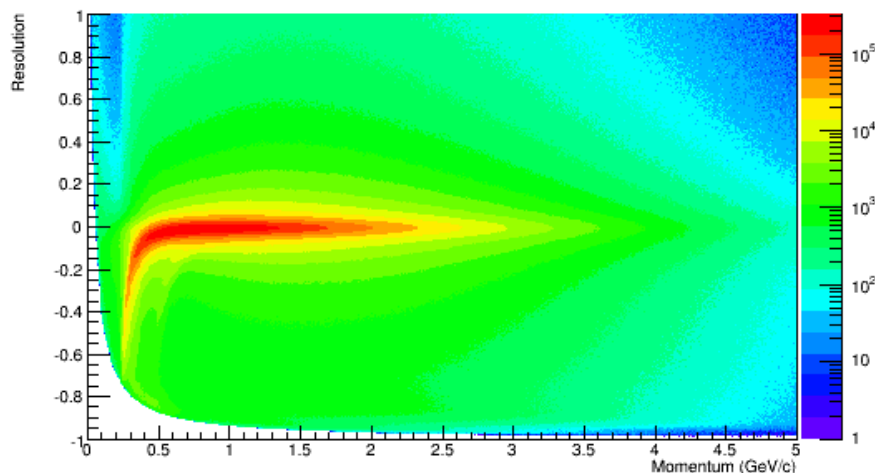
Kaon momentum resolution (Refit + PV-constrained)



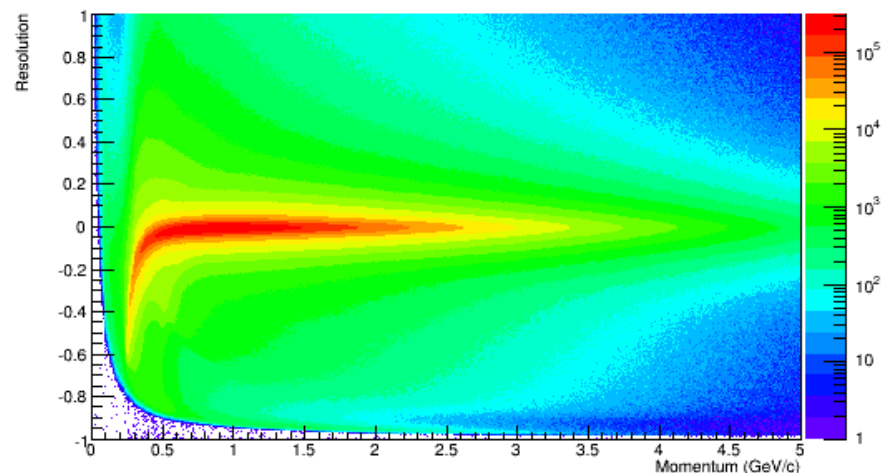
P^\pm : Momentum resolution for different options

- Request 25, [BiBi@9.2](#), UrQMD + Geant4
- Tracks: $|DCA| < 20$; 5σ P-ID by TPC, $\sigma = (p_{\text{rec}} - p_{\text{gen}}) / p_{\text{gen}}$

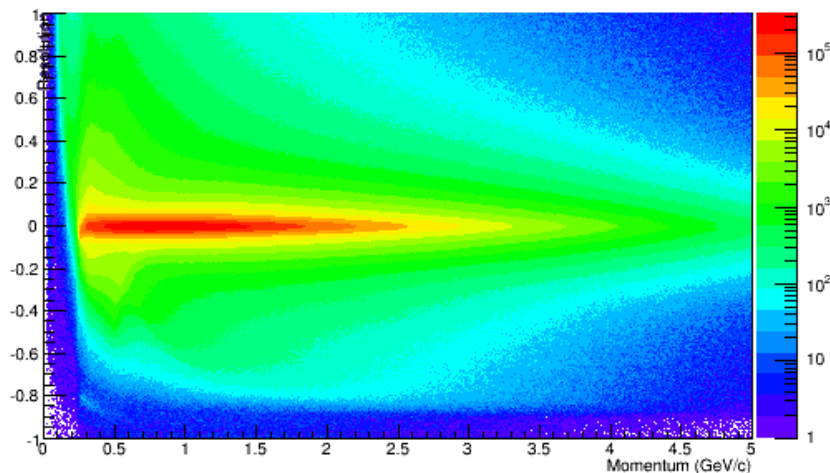
Proton momentum resolution (default)



Proton momentum resolution (PV-constrained)

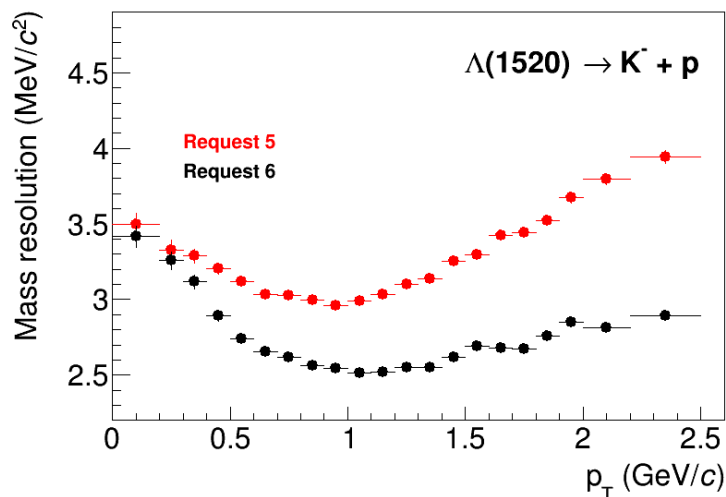
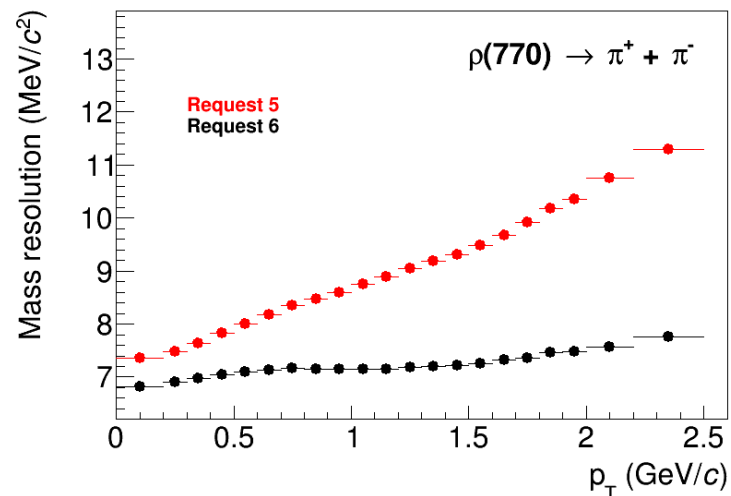
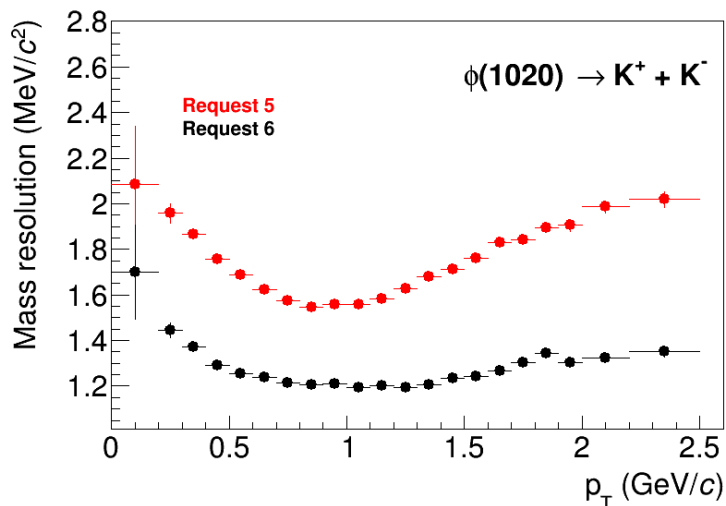


Proton momentum resolution (Refit + PV-constrained)



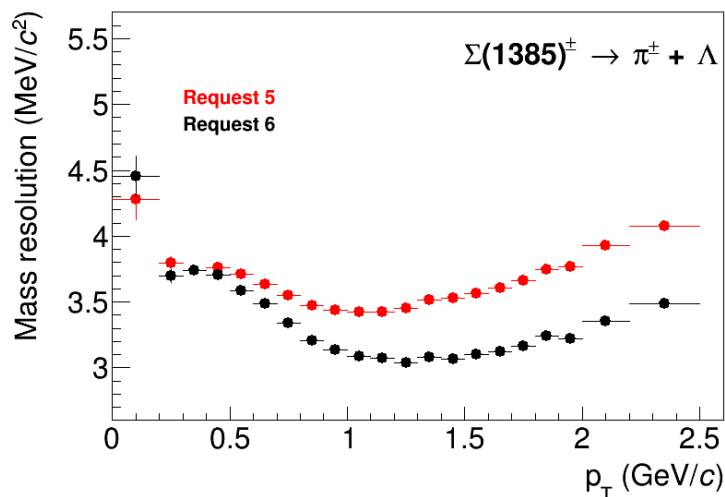
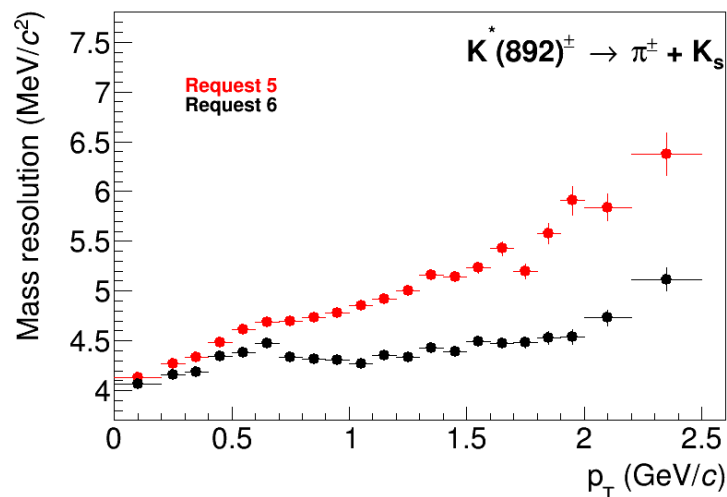
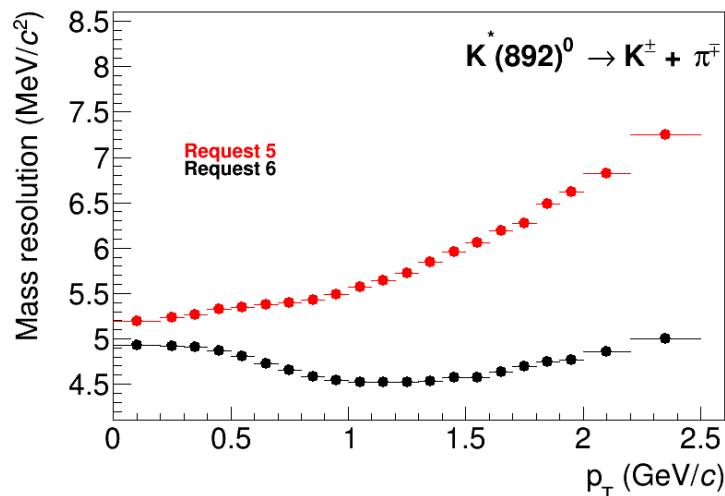
Mass resolution for resonances

- Request 25, [BiBi@9.2](#), UrQMD + Geant4
- Resonance wagons



Mass resolution for resonances

- Request 25, [BiBi@9.2](#), UrQMD + Geant4
- Resonance wagons



Conclusions

- Code changes have been committed to mpdroot
- Tested with Analysis Train Request 6 (9 wagons including evPID): successfully finished
- Please report any problems

BACKUP