



**Universität  
Heidelberg**

# **DCA to primary vertex distributions in Real and MC data**

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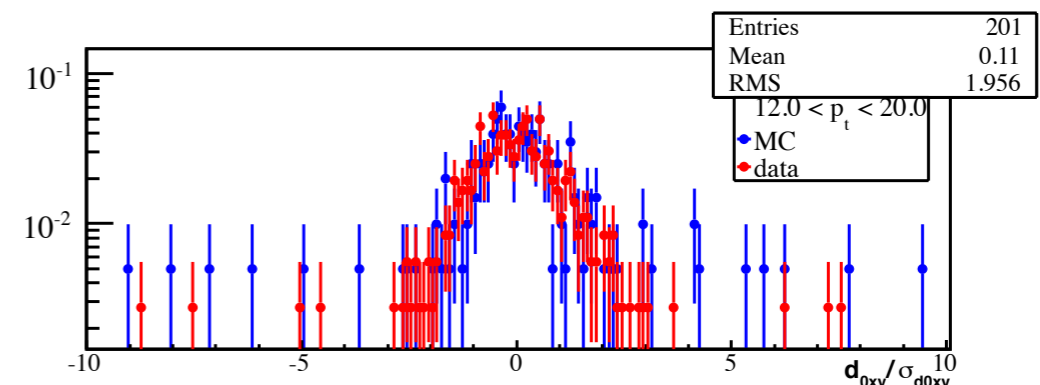
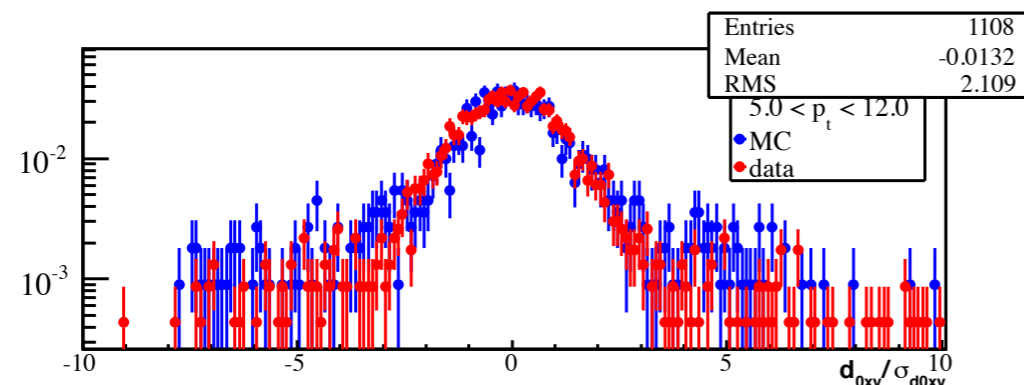
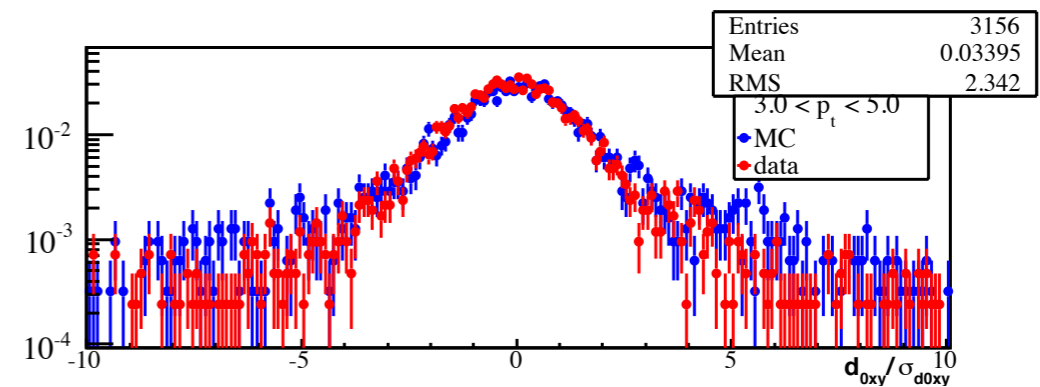
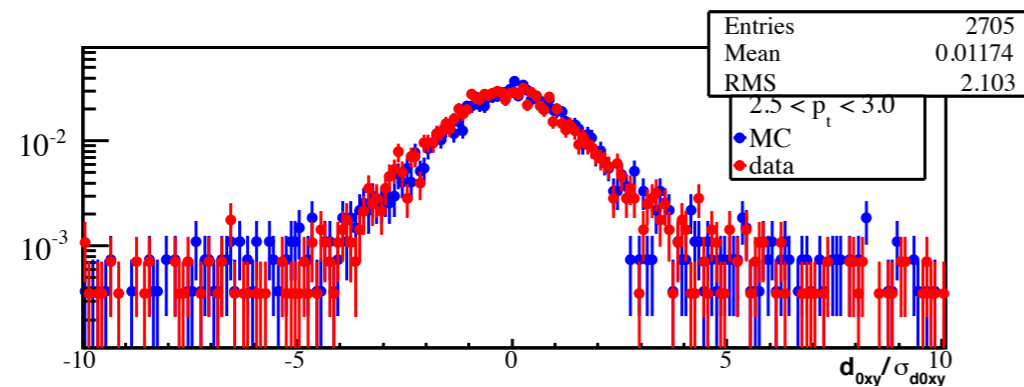
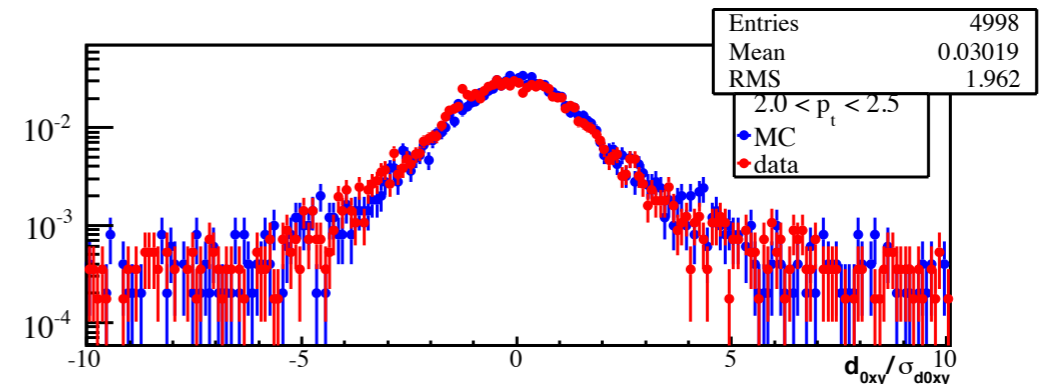
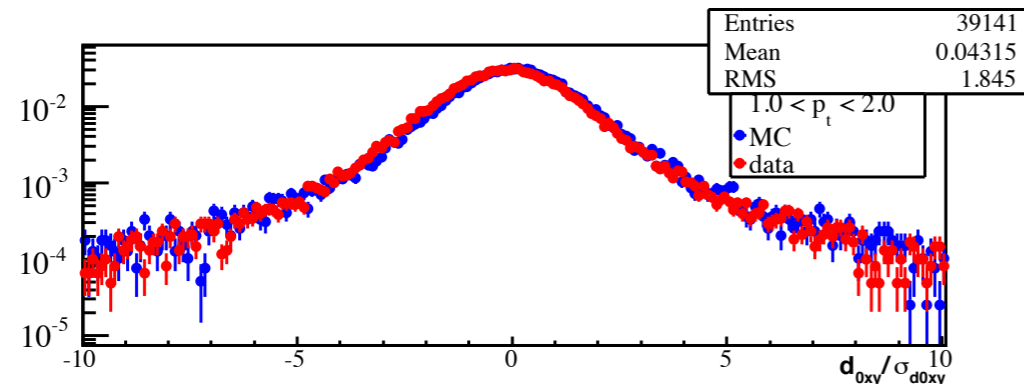
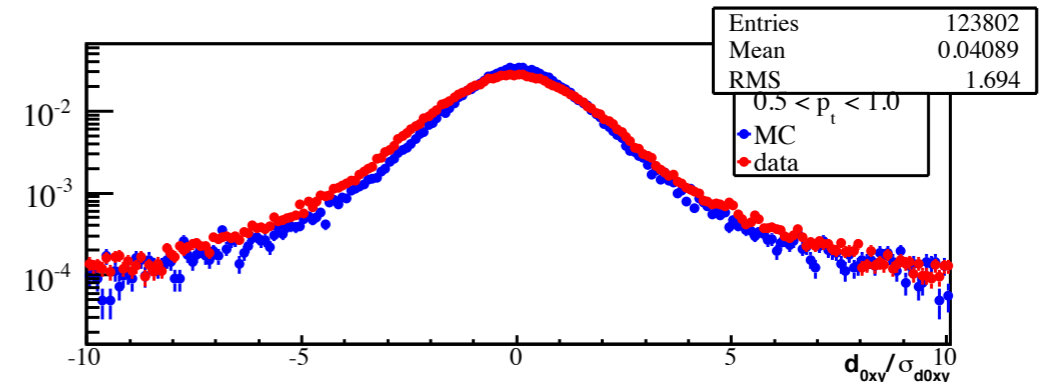
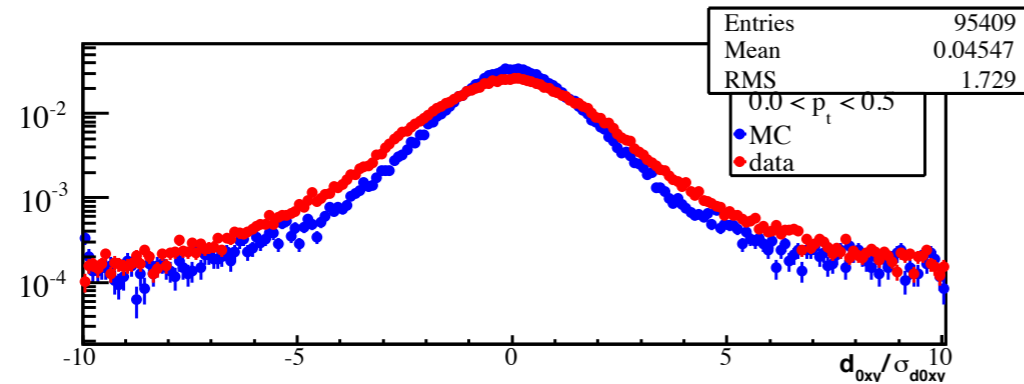
October 29<sup>th</sup> 2010

# Track selection and data samples

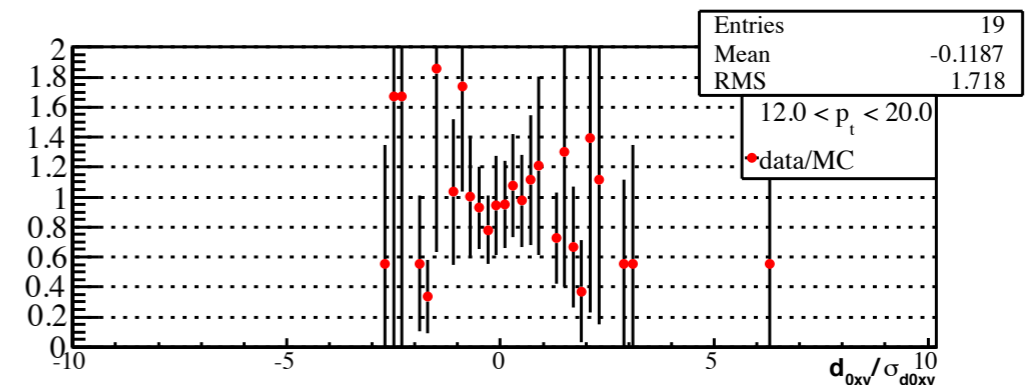
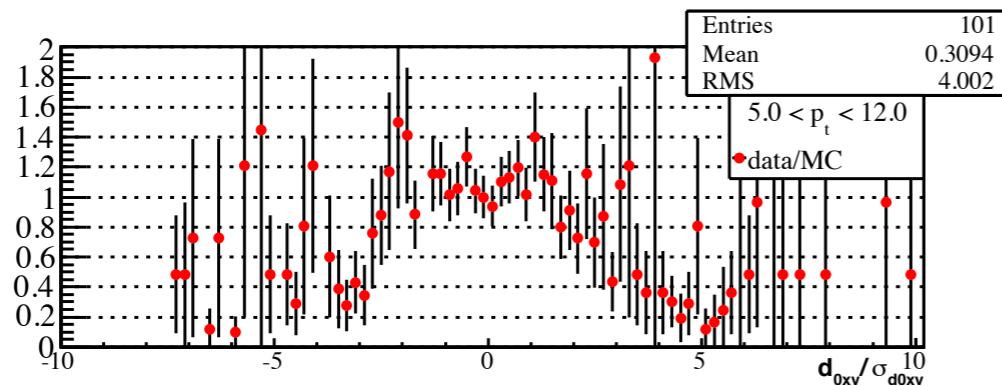
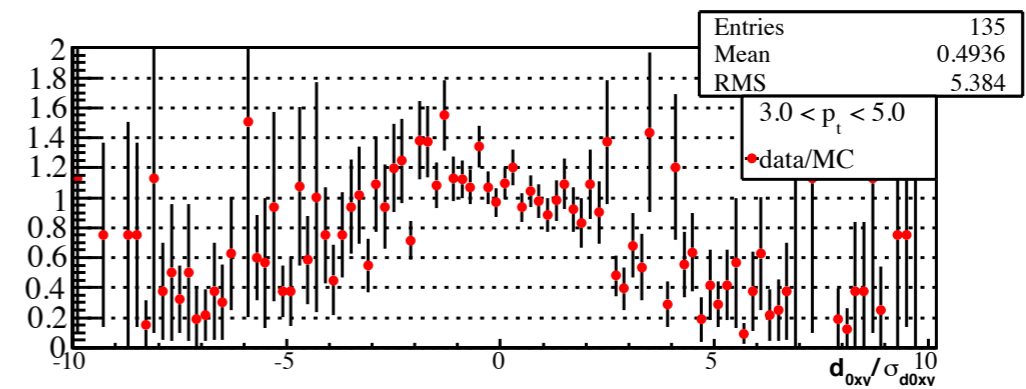
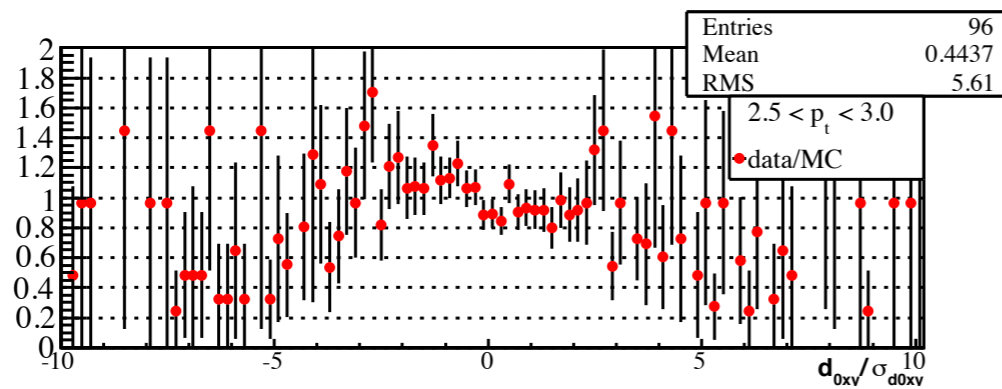
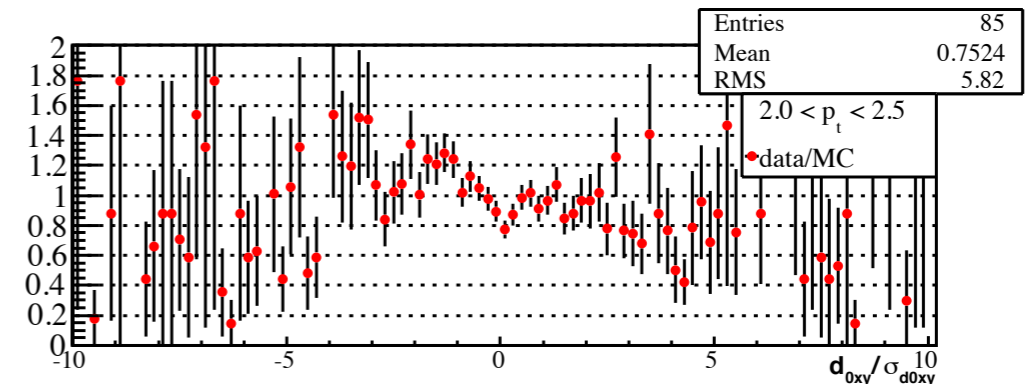
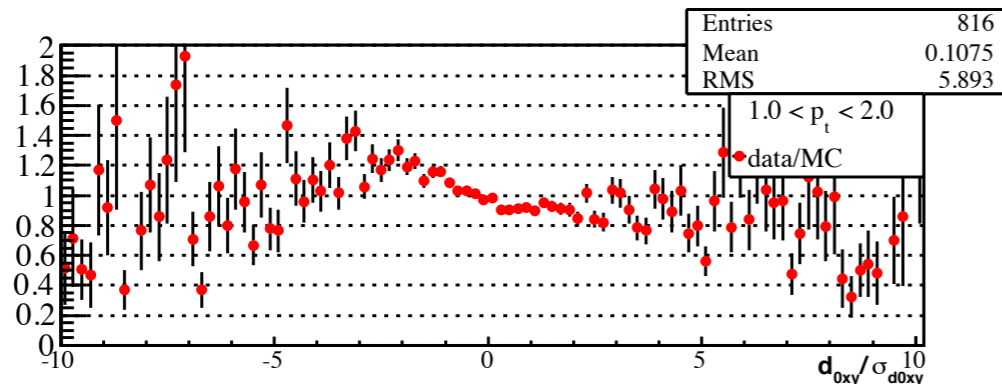
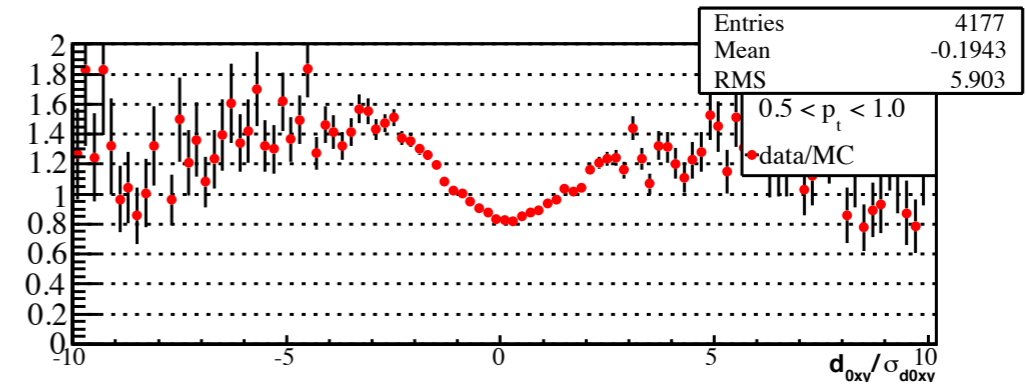
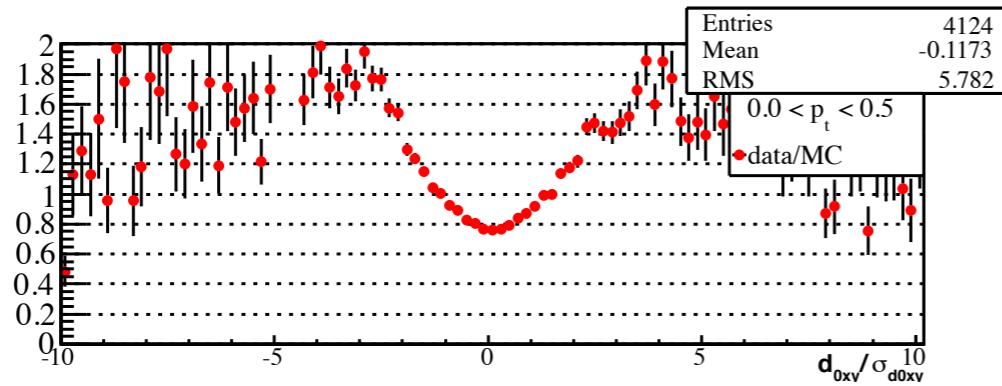
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- Data: LHC10c pass2
- MC: LHC10d4
  
- Tracks cuts: HFE standard cuts including first pixel requirement and TOF +TPC PID → At low momentum Hadron contamination is very small(up to 2 GeV, it is less than a few %), so we can consider those are pure electrons at low momentum

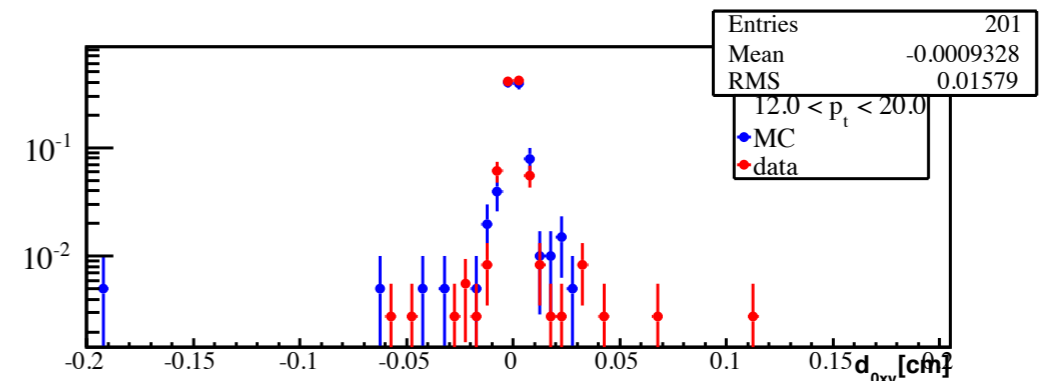
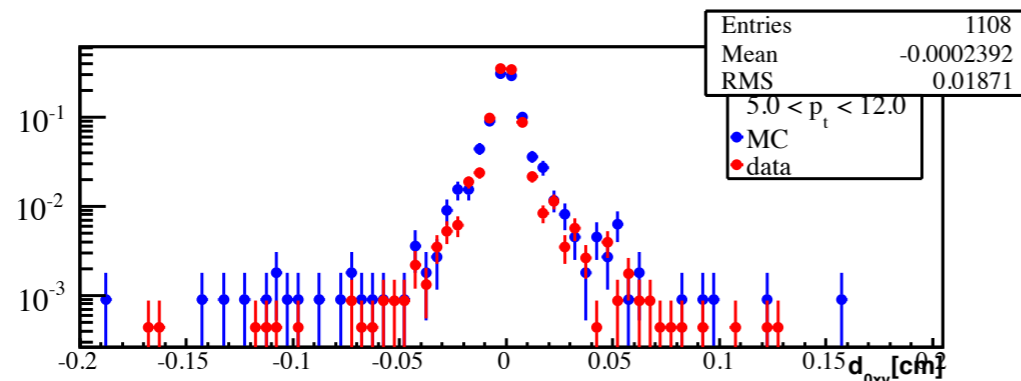
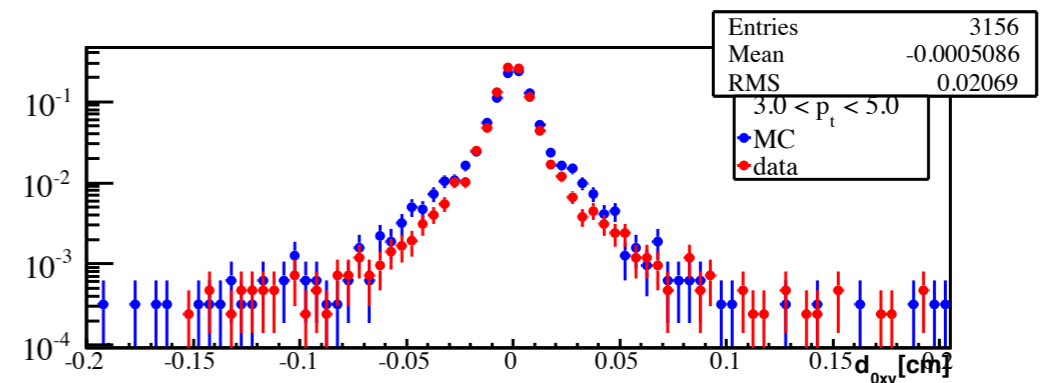
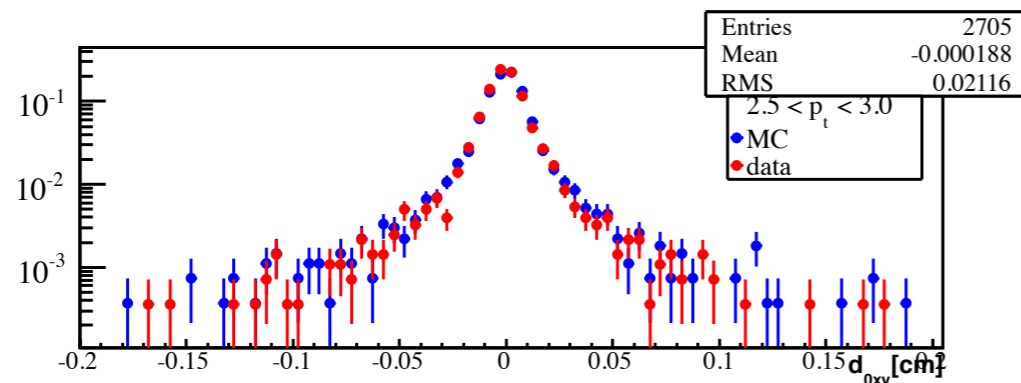
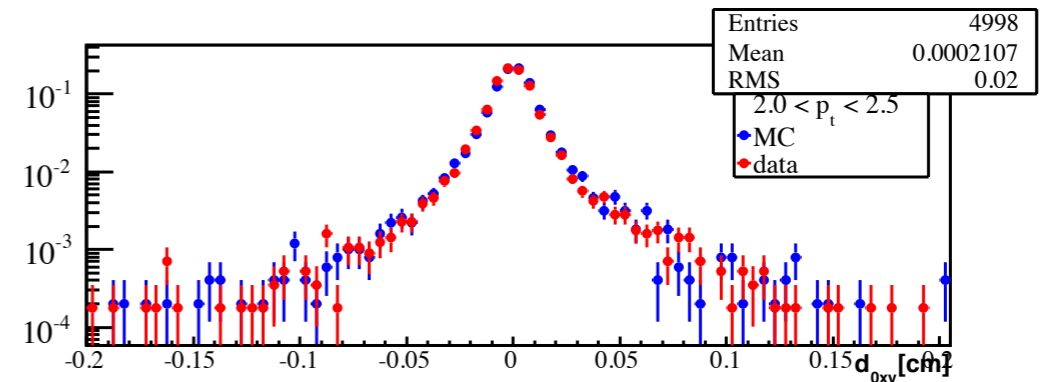
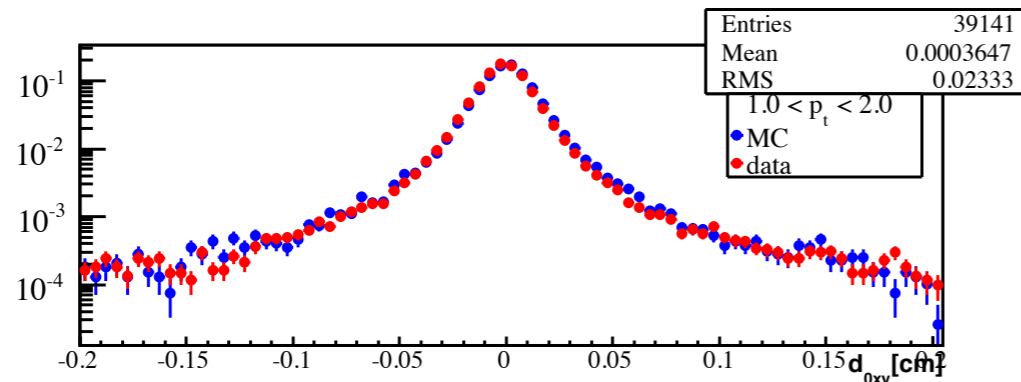
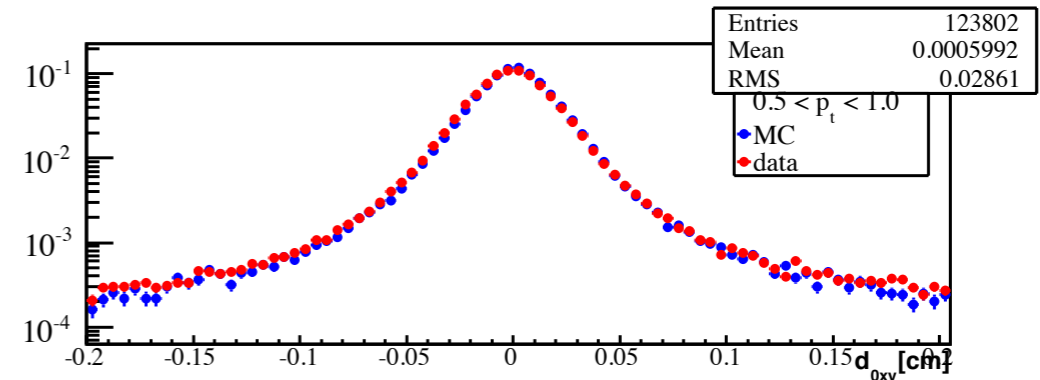
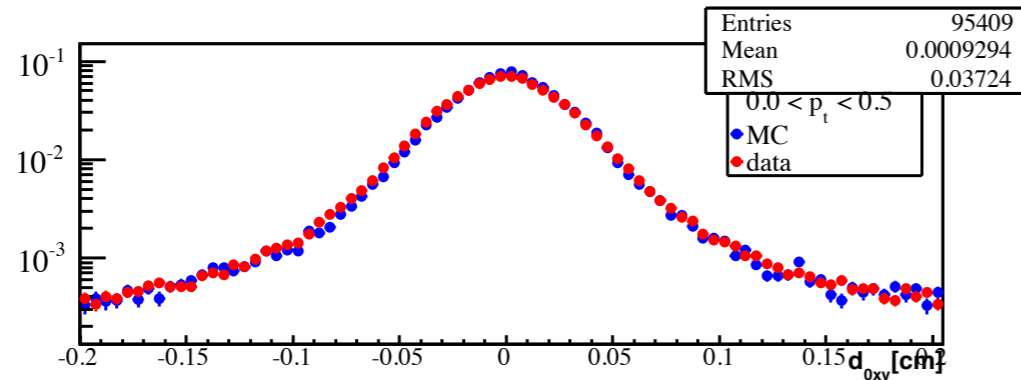
# $d_{0xy}/\sigma_{d0xy}$ distribution in Real and MC data



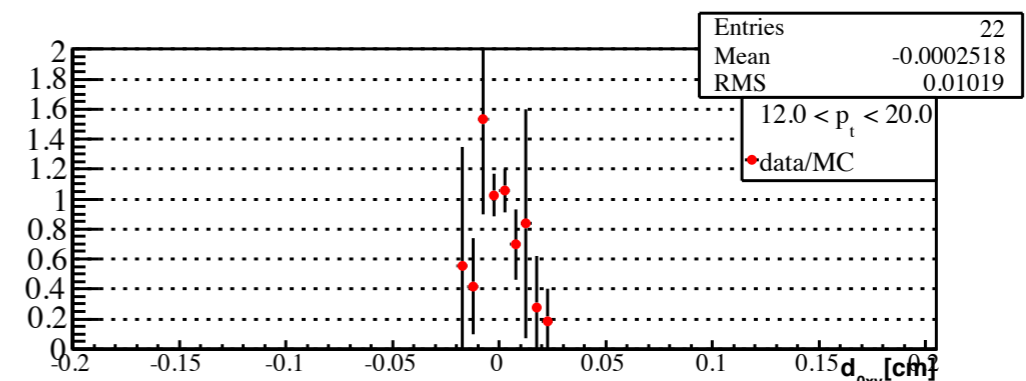
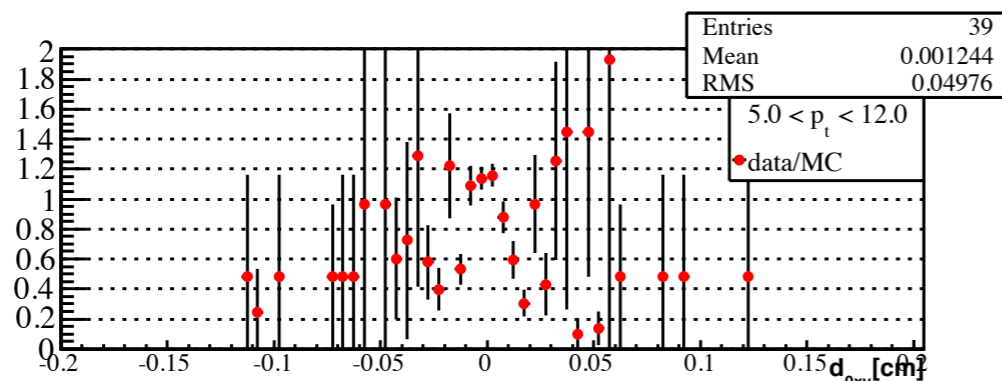
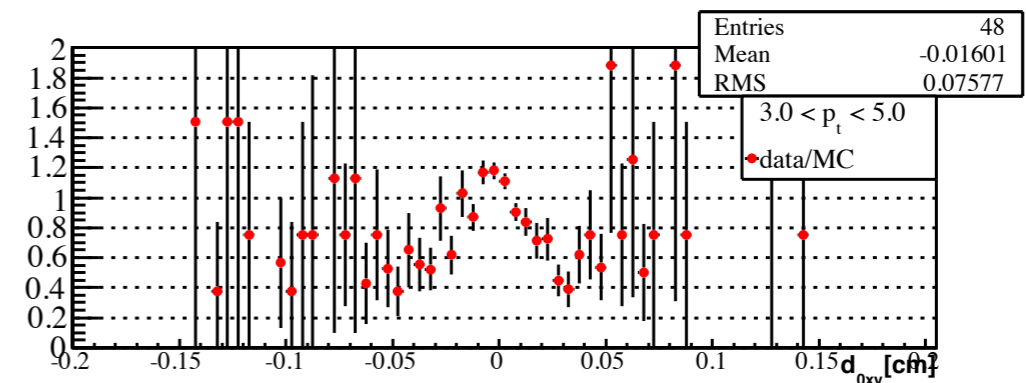
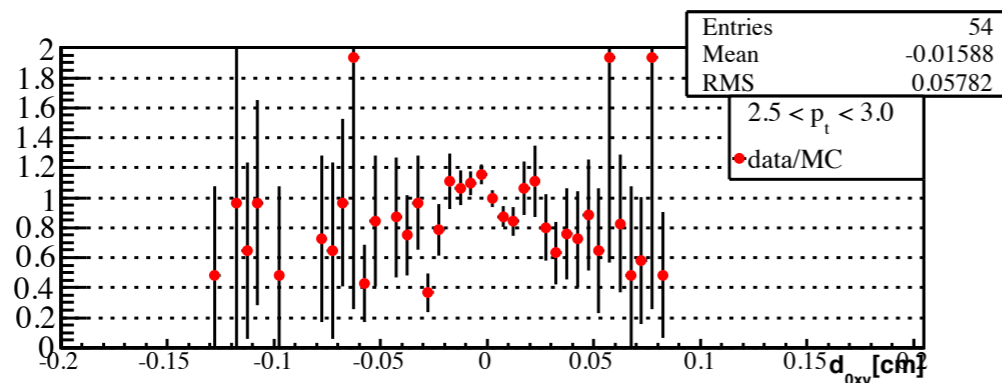
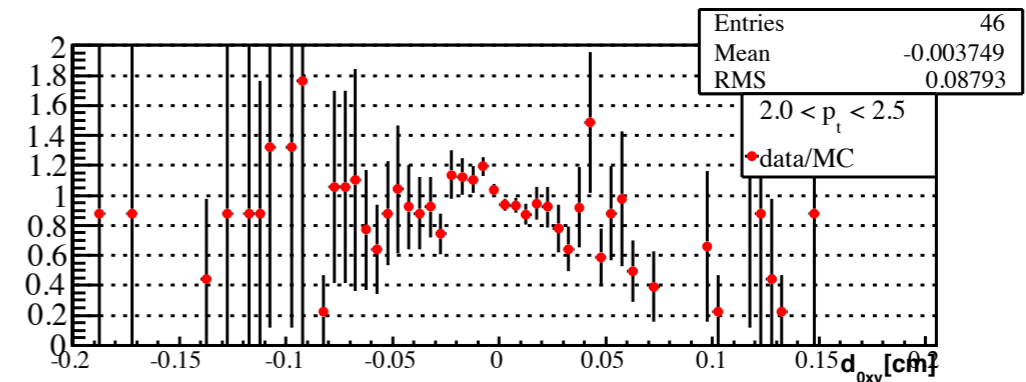
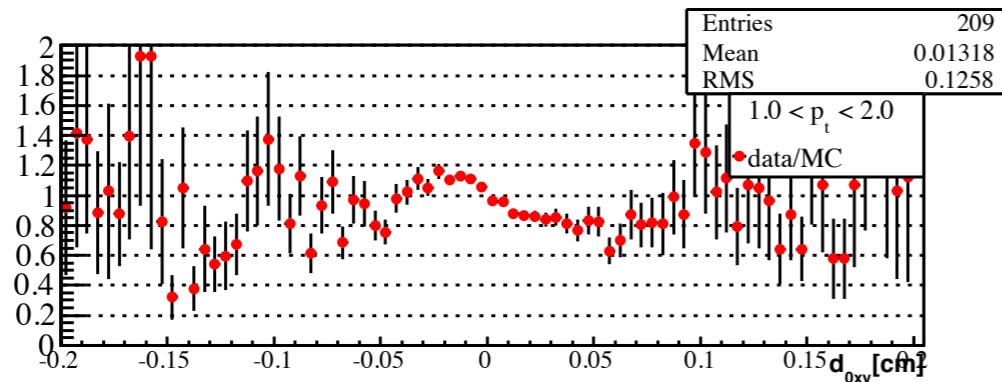
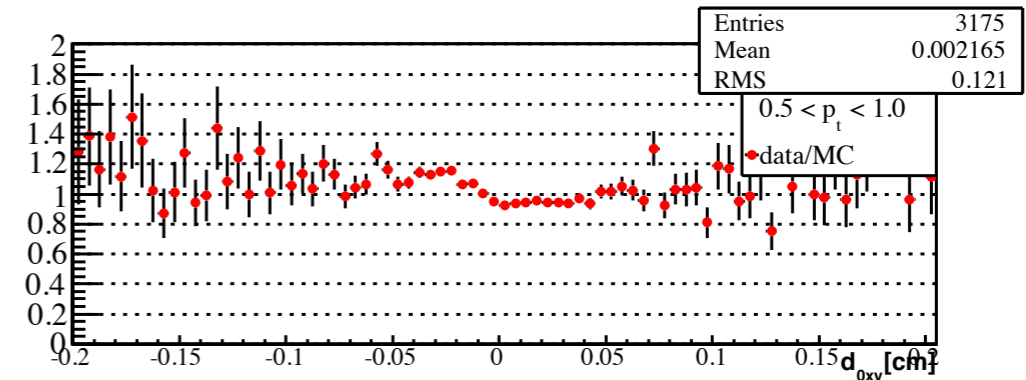
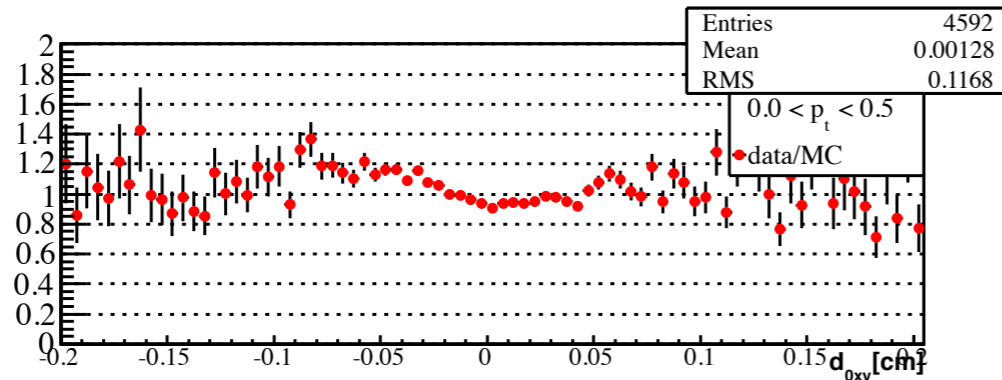
# Real and MC Ratio vs. $d_{0xy}/\sigma_{d0xy}$



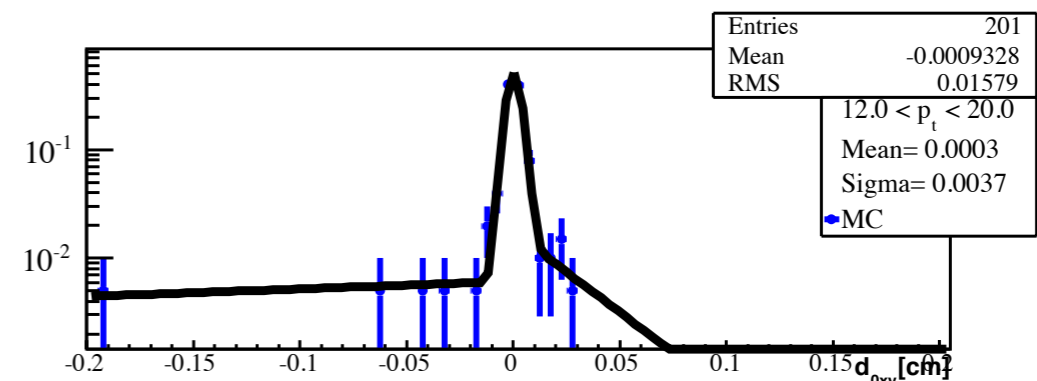
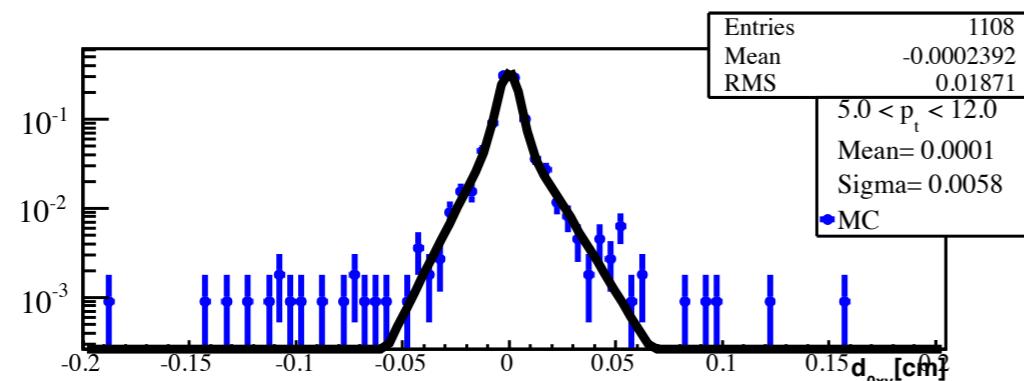
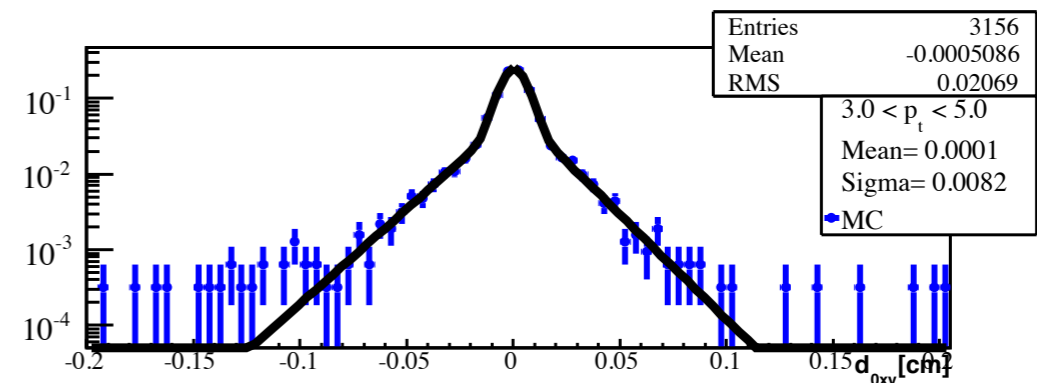
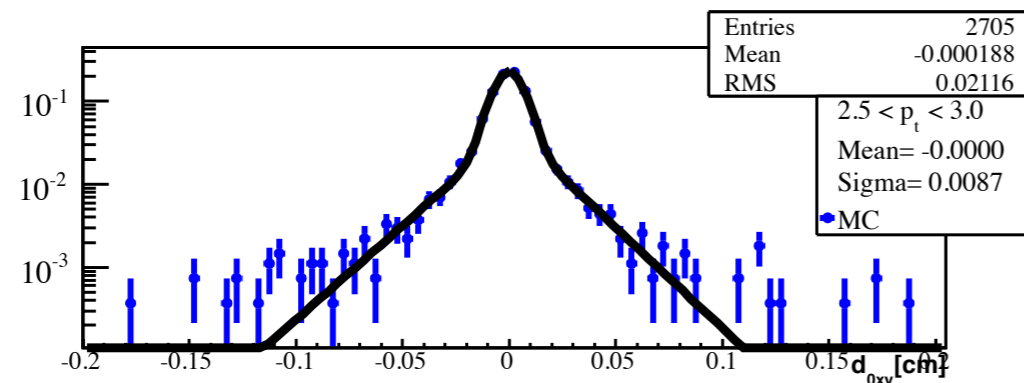
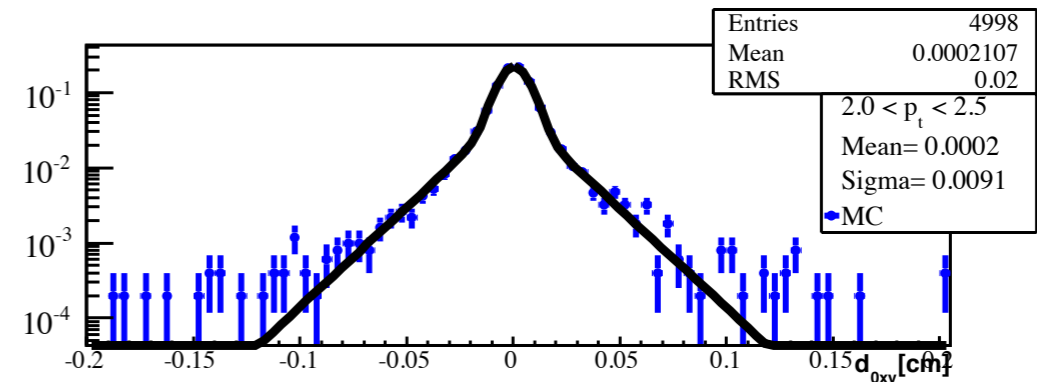
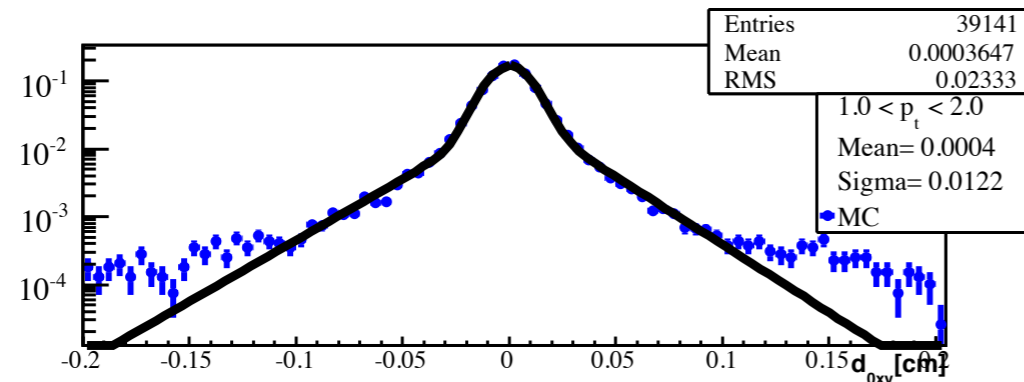
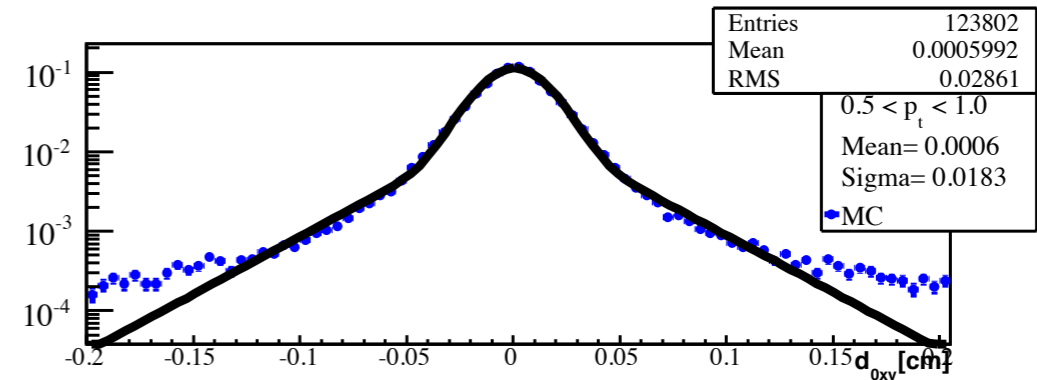
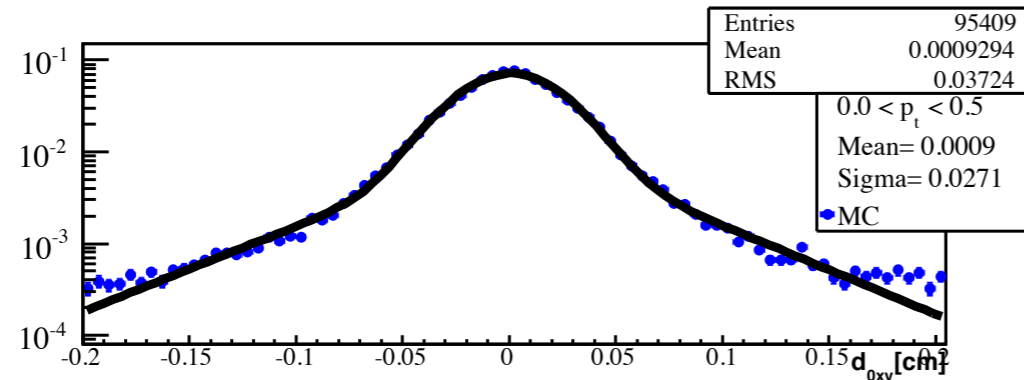
# $d_{0xy}$ distribution in Real and MC data



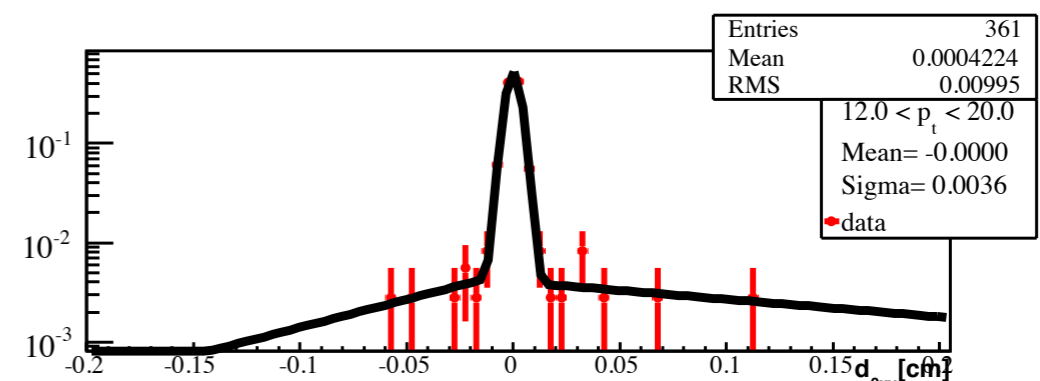
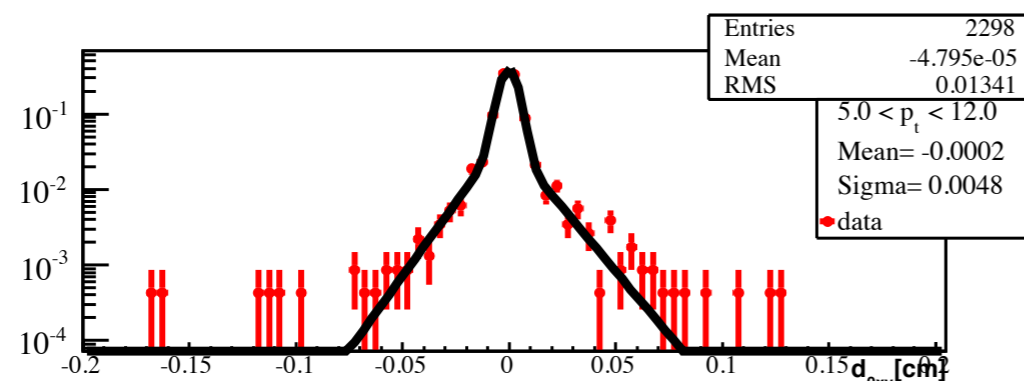
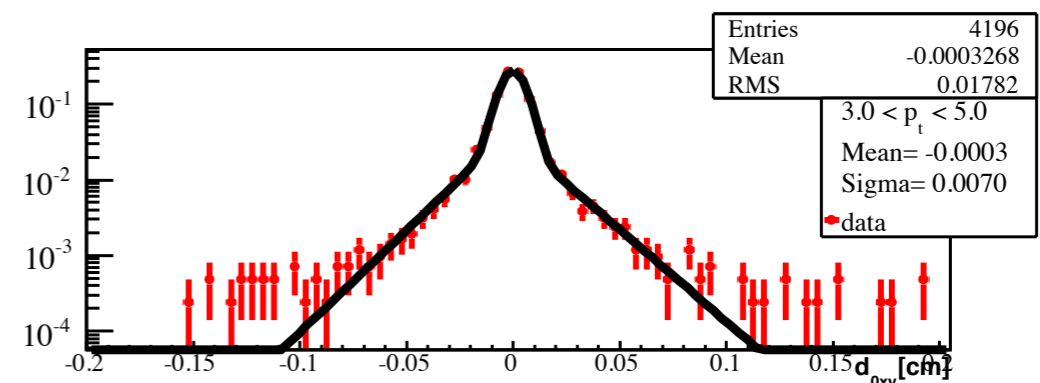
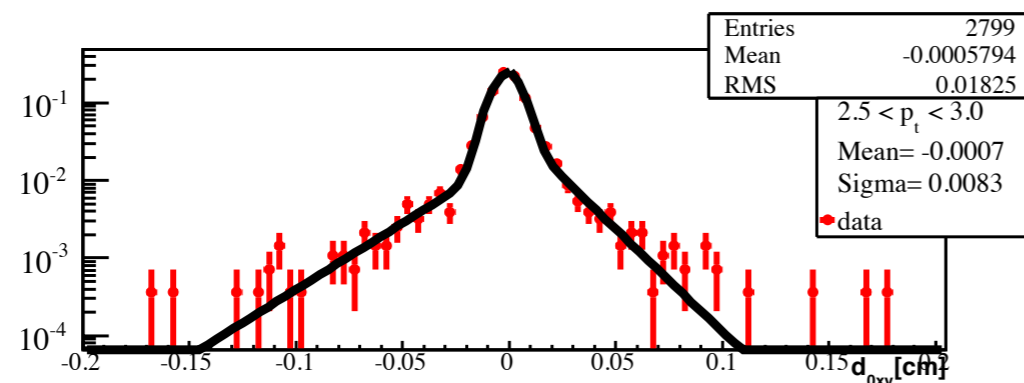
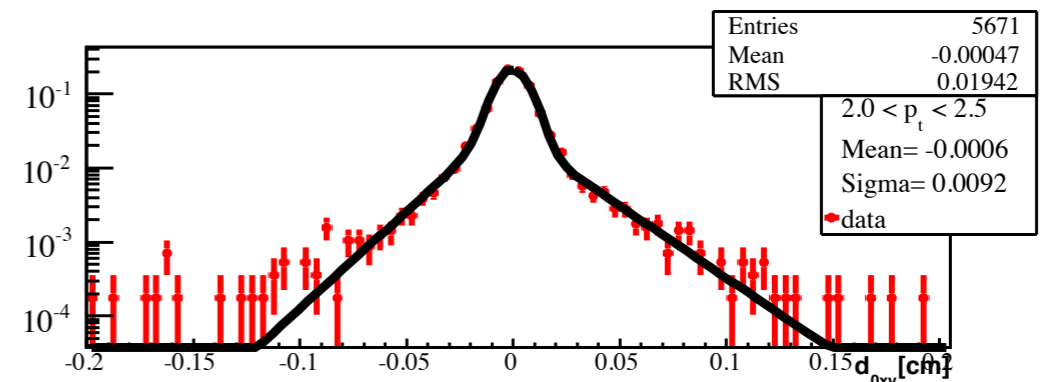
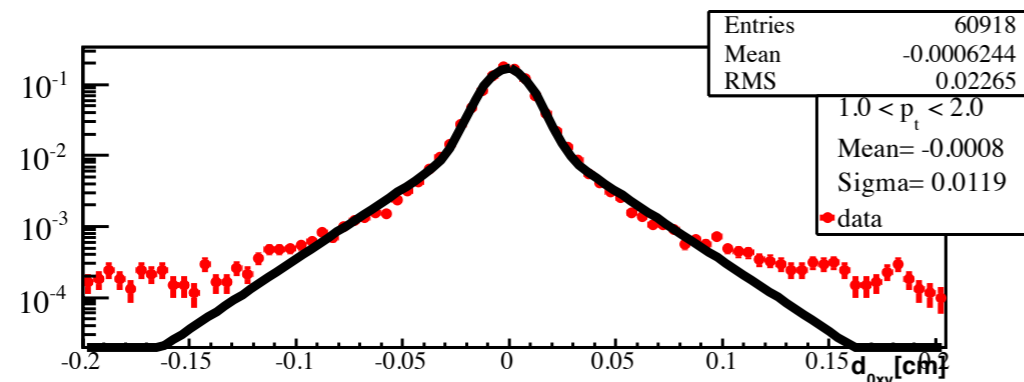
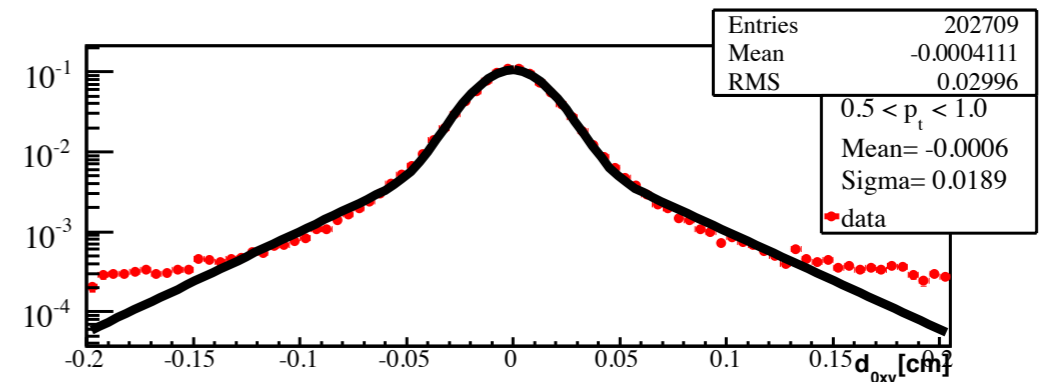
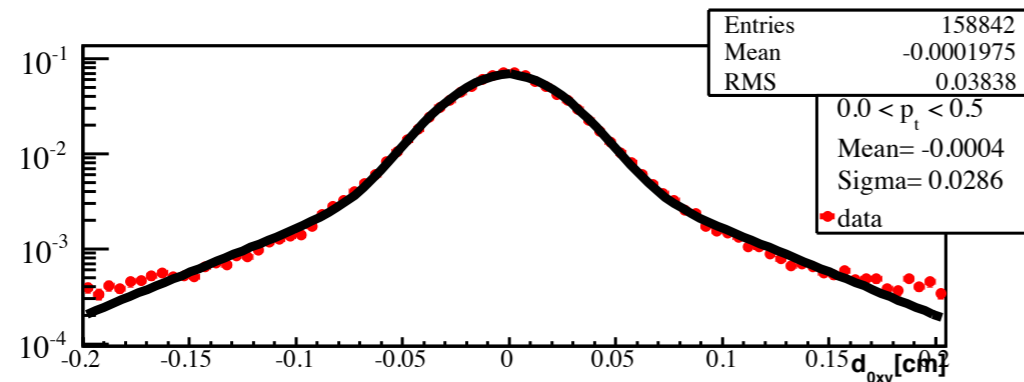
# Real and MC Ratio vs. $d_{0xy}$



# $d_{0xy}$ Fit with gaussian+exponential for MC

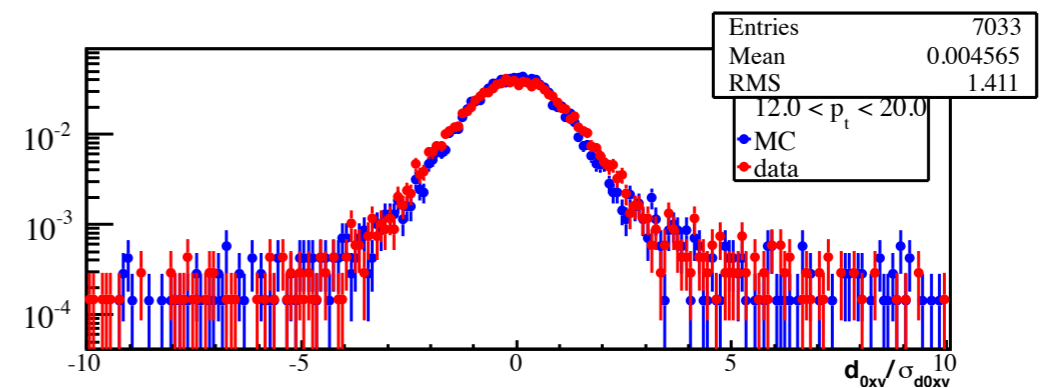
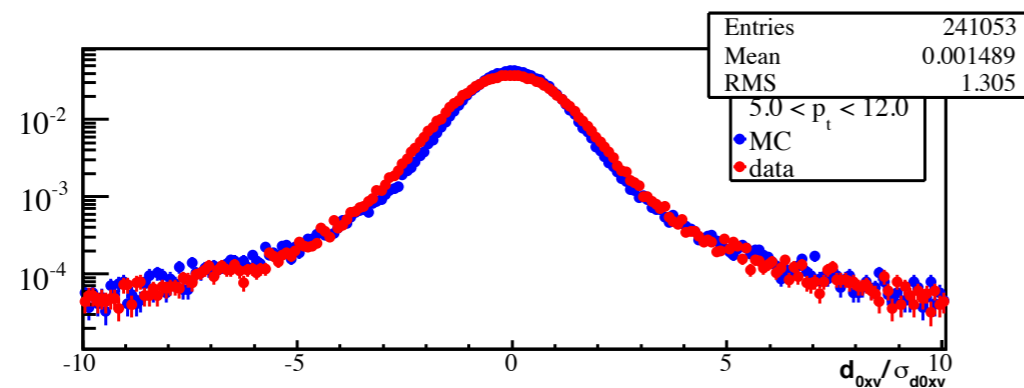
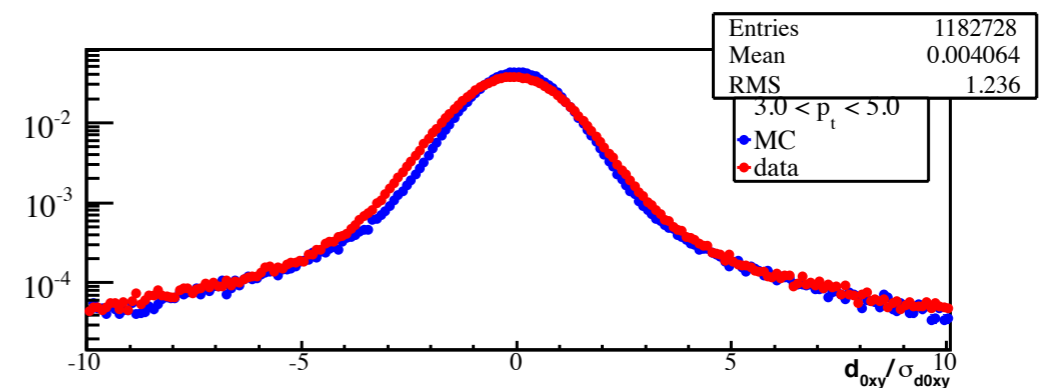
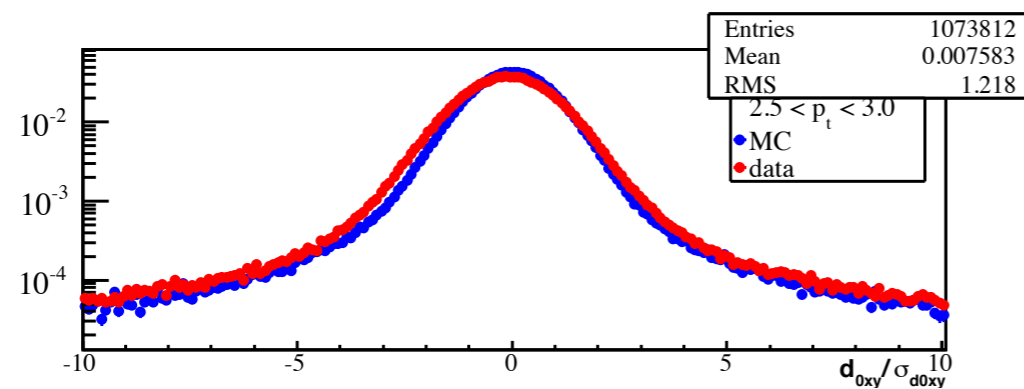
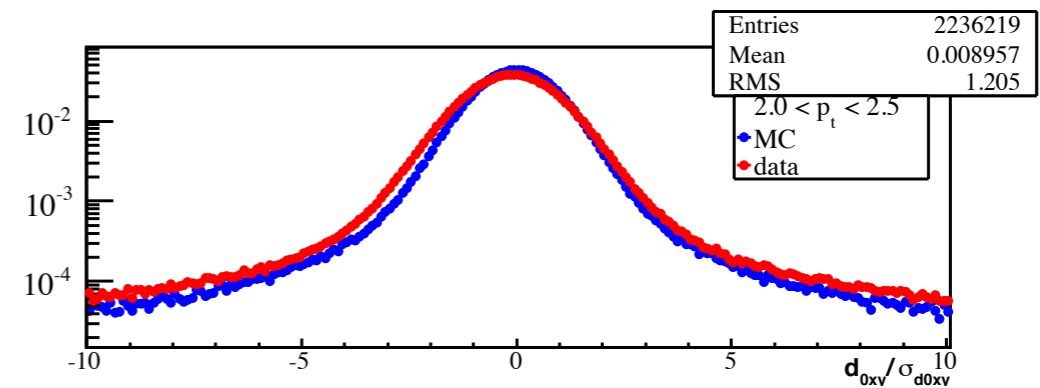
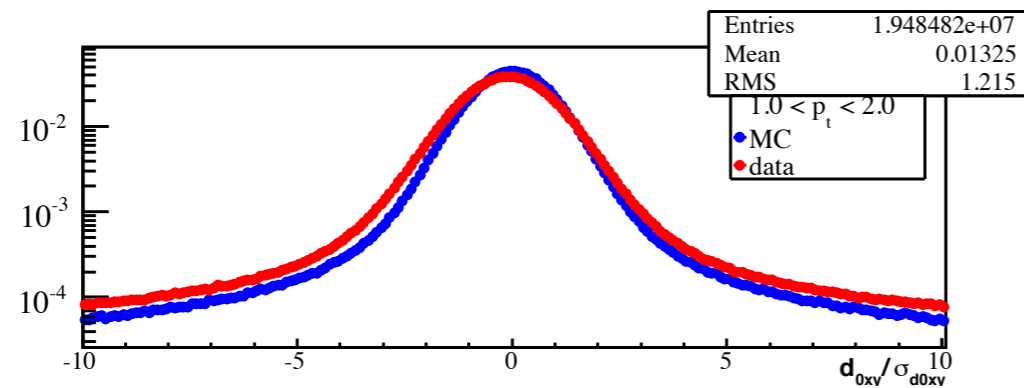
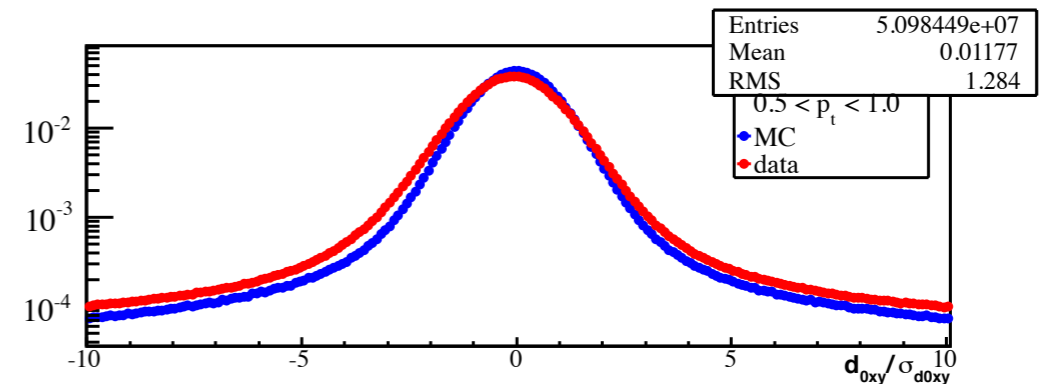
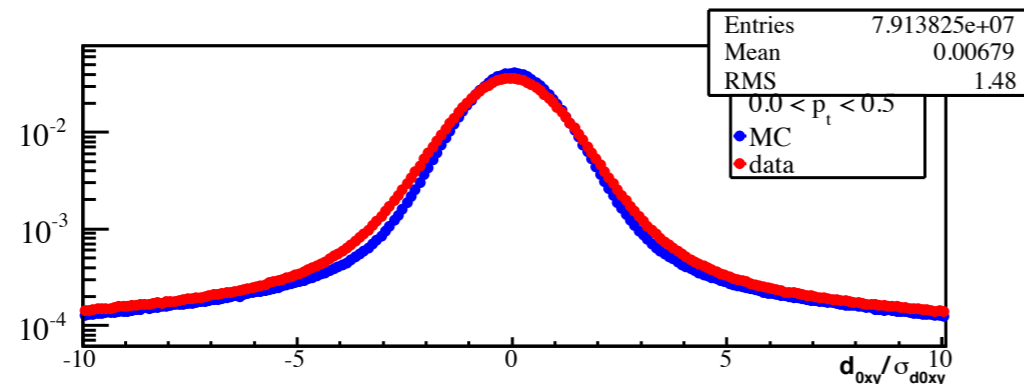


# $d_{oxy}$ Fit with gaussian+exponential for data

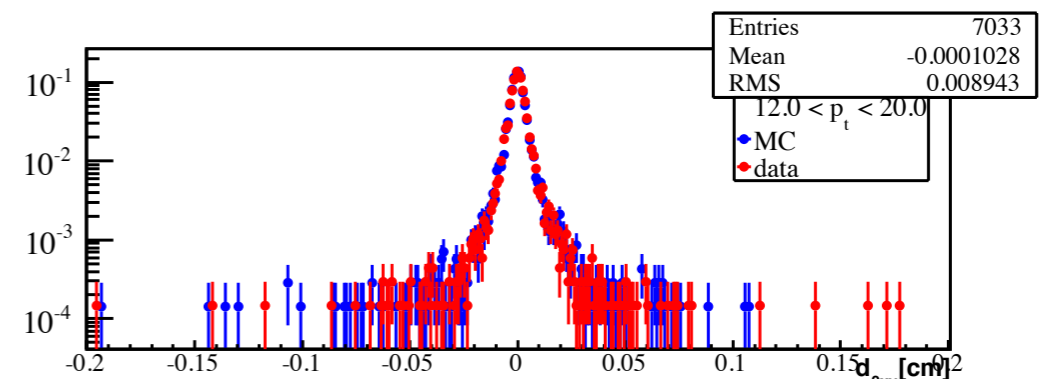
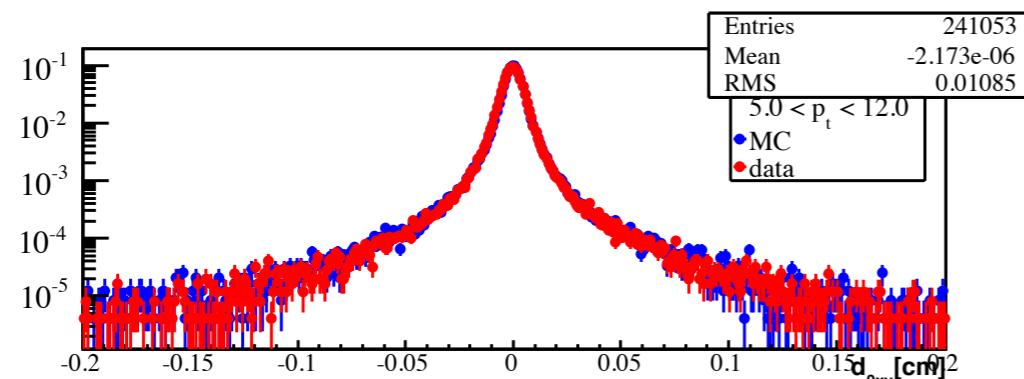
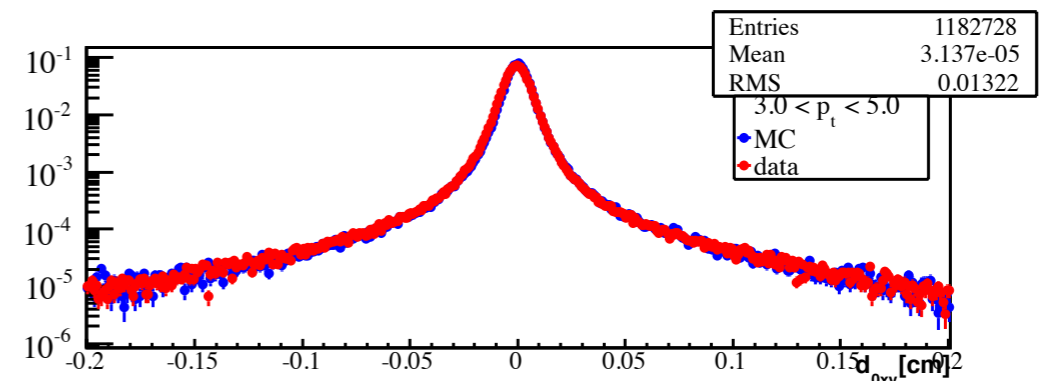
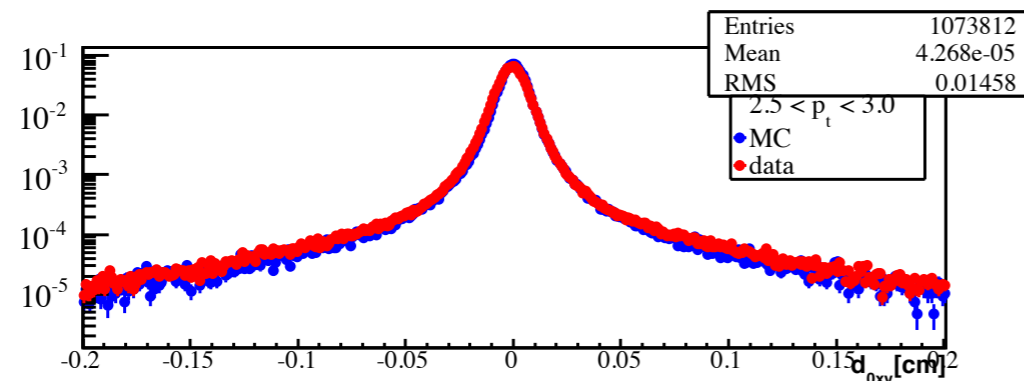
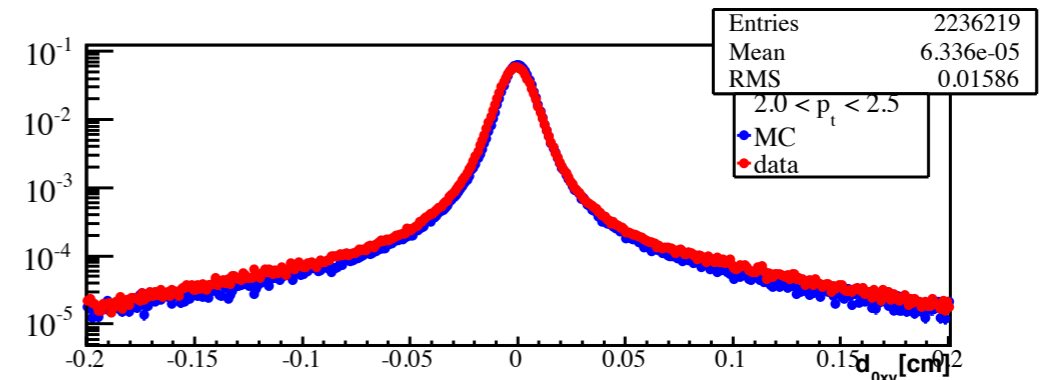
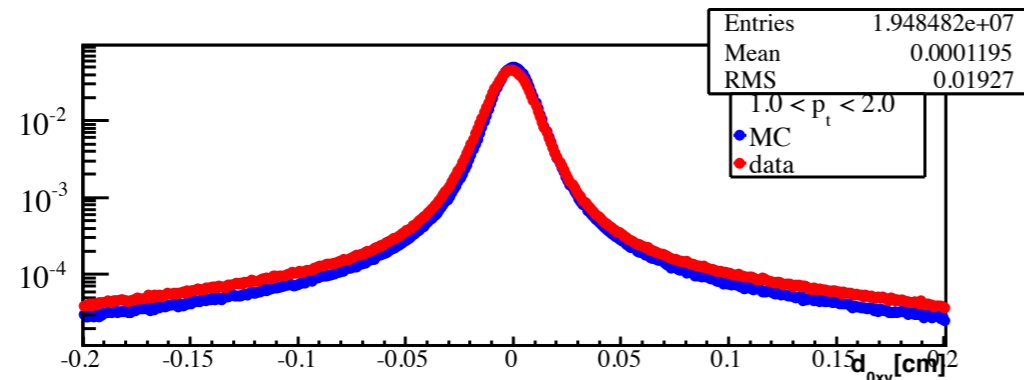
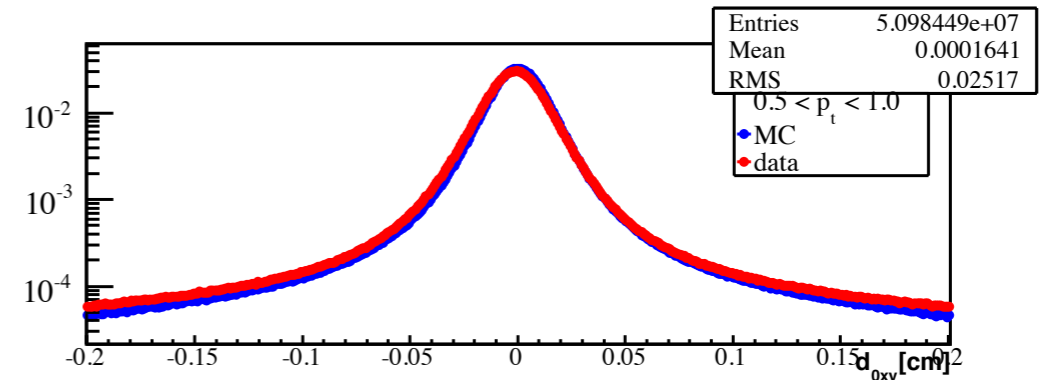
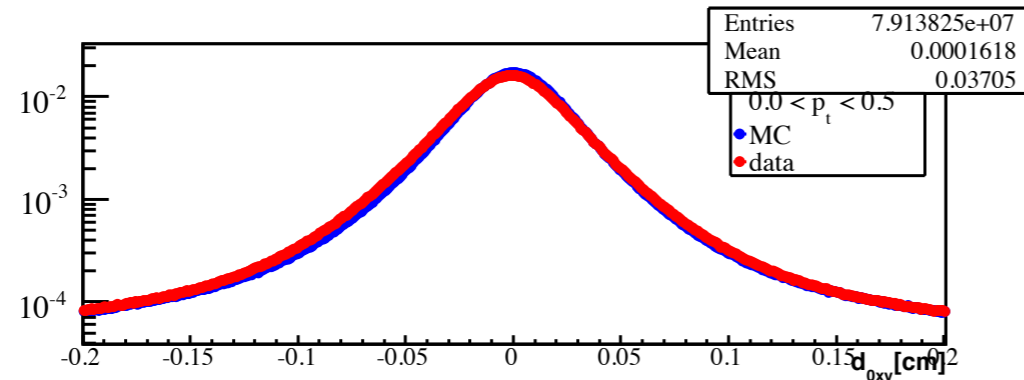




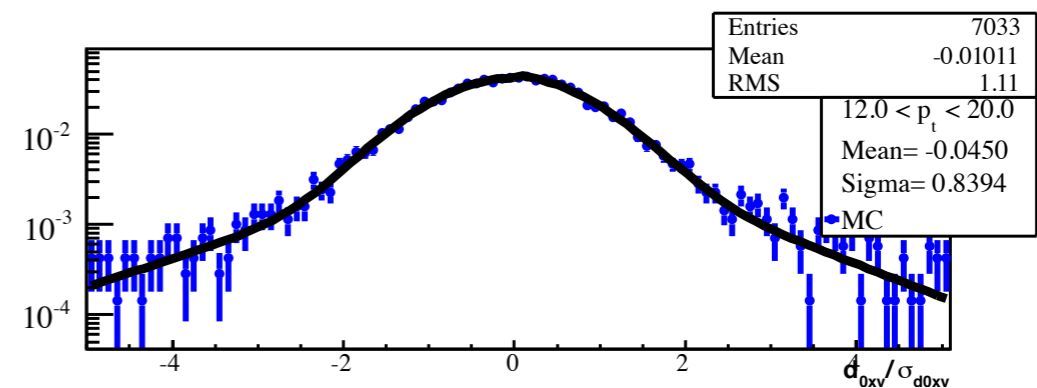
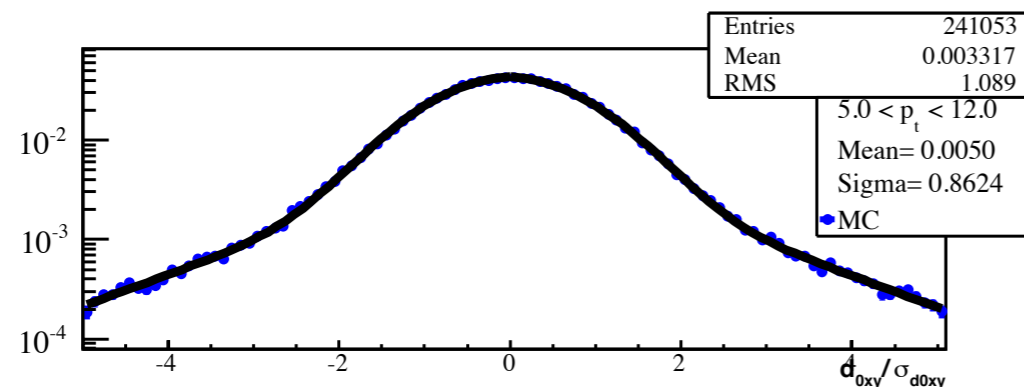
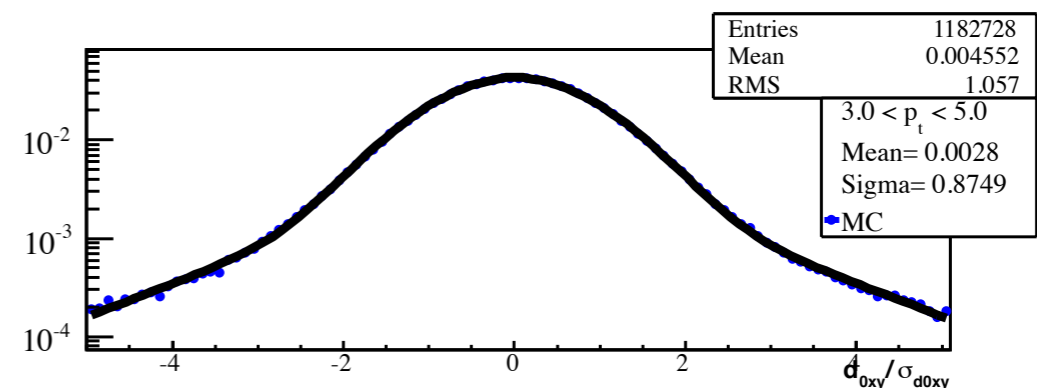
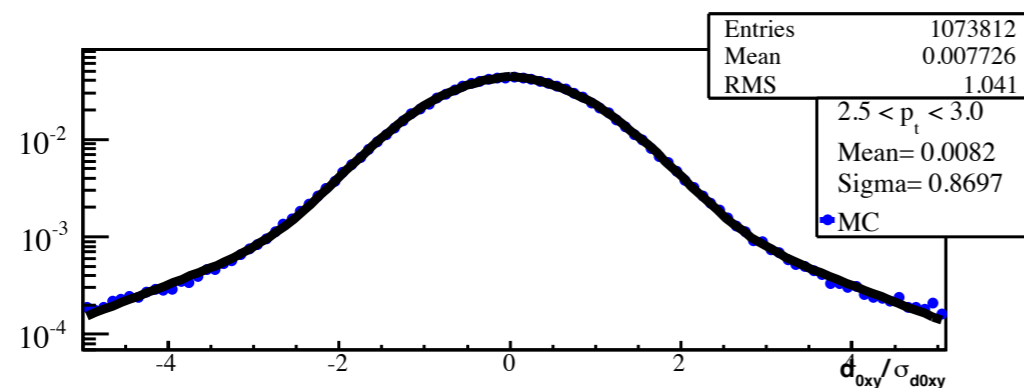
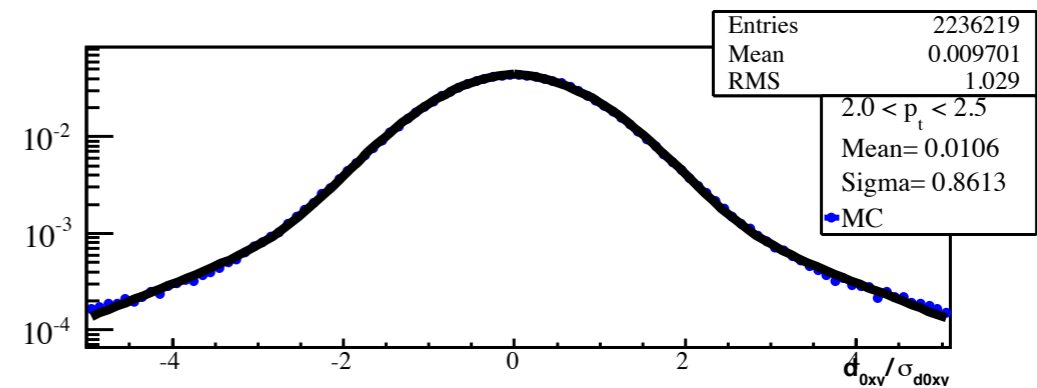
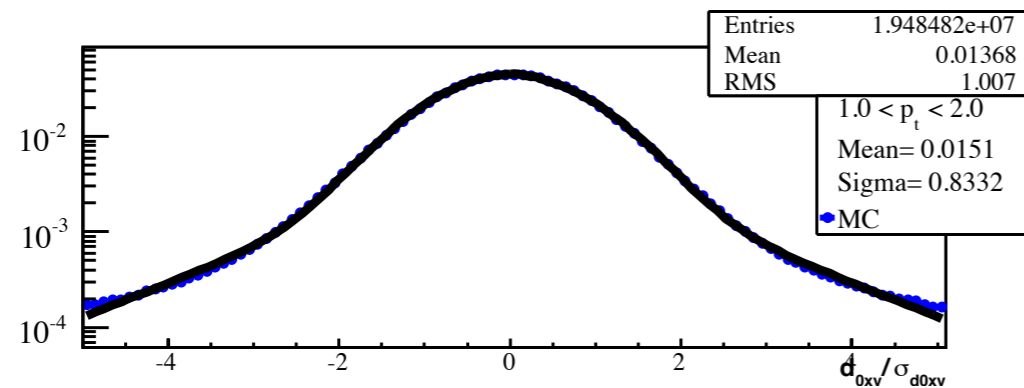
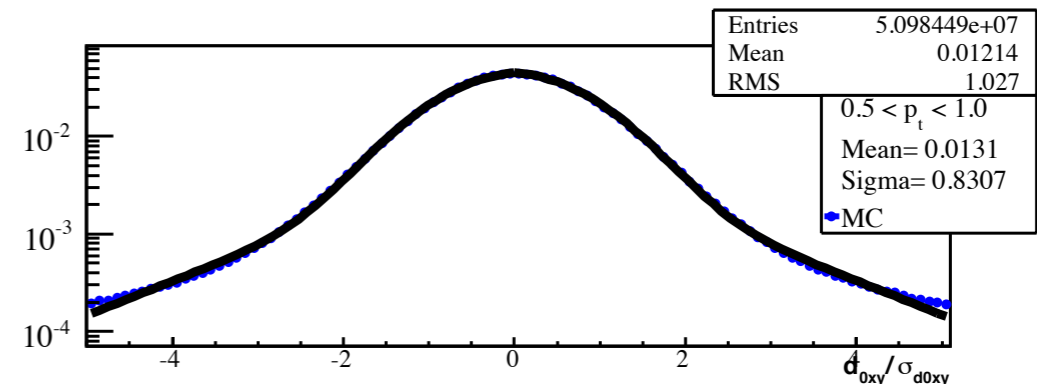
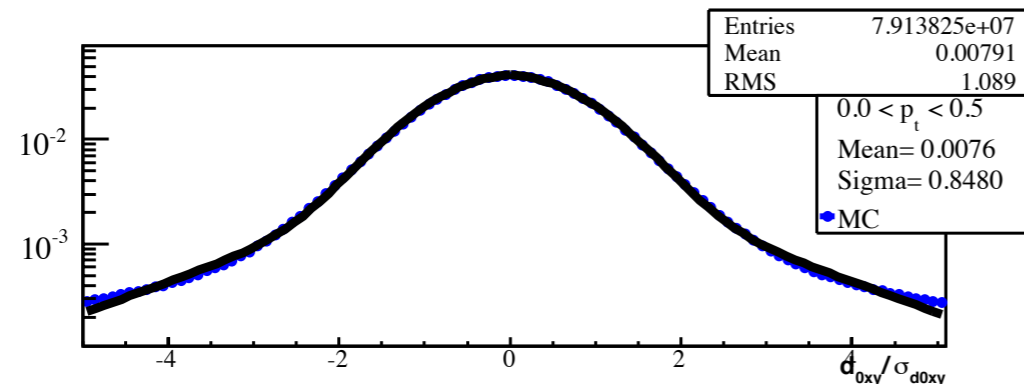
# $d_{0xy}/\sigma_{d0xy}$ distribution in Real and MC data for unidentified tracks



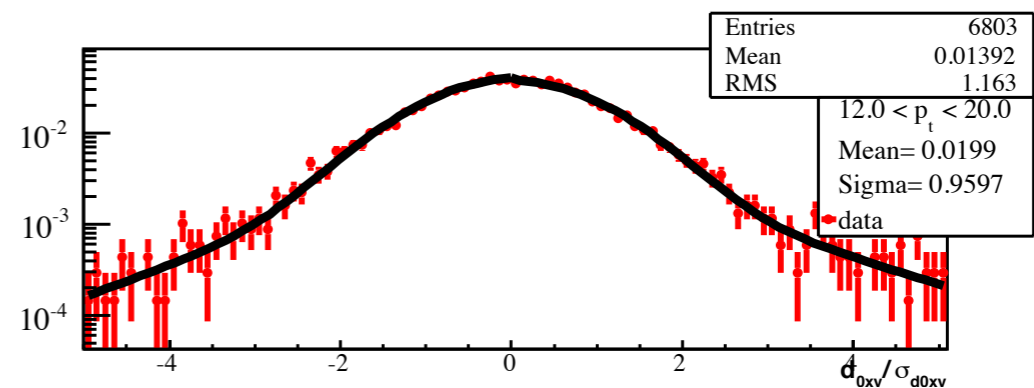
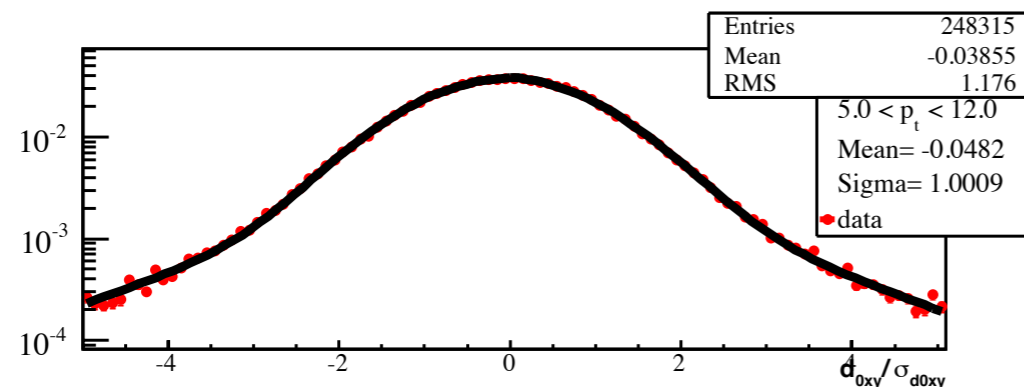
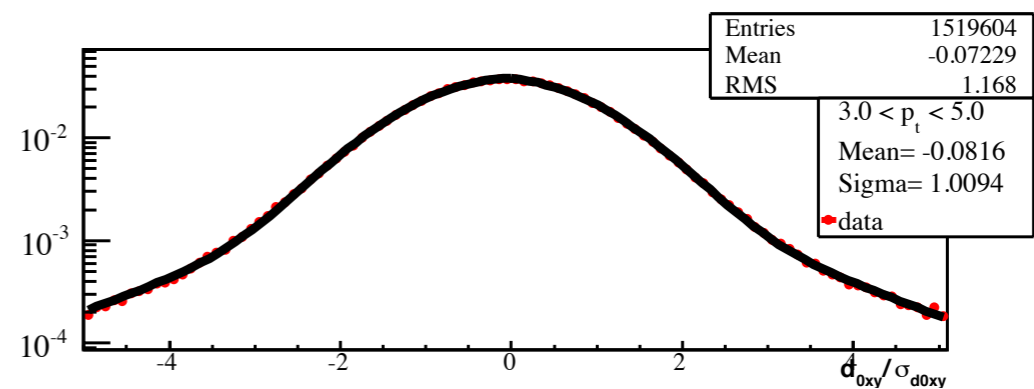
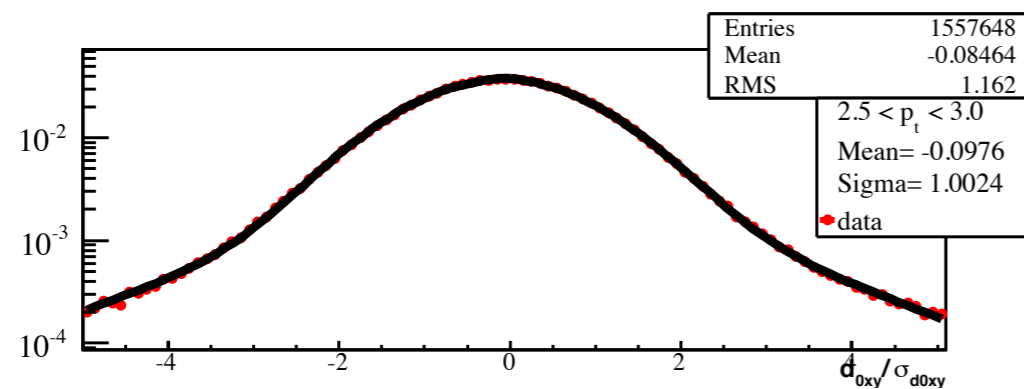
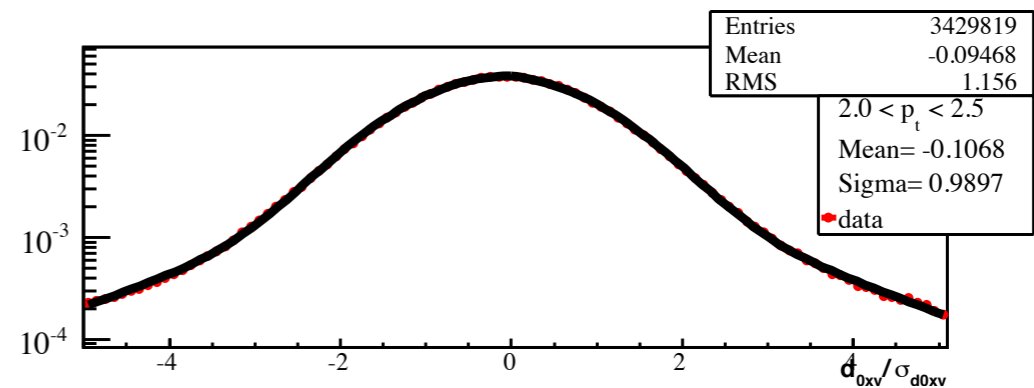
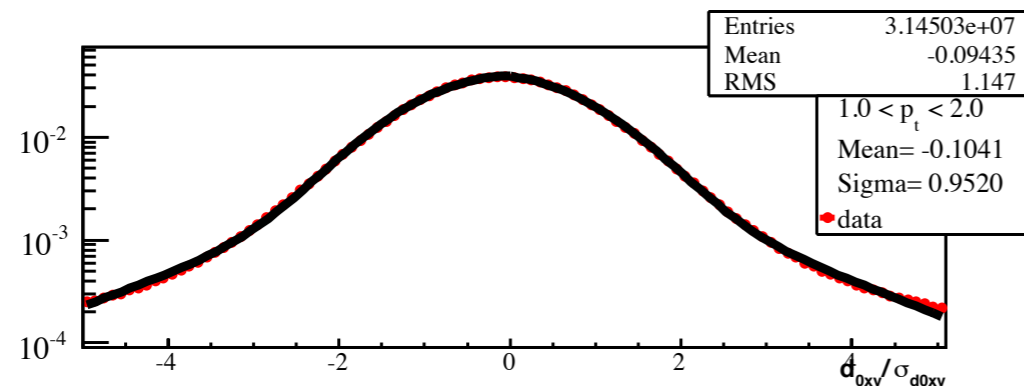
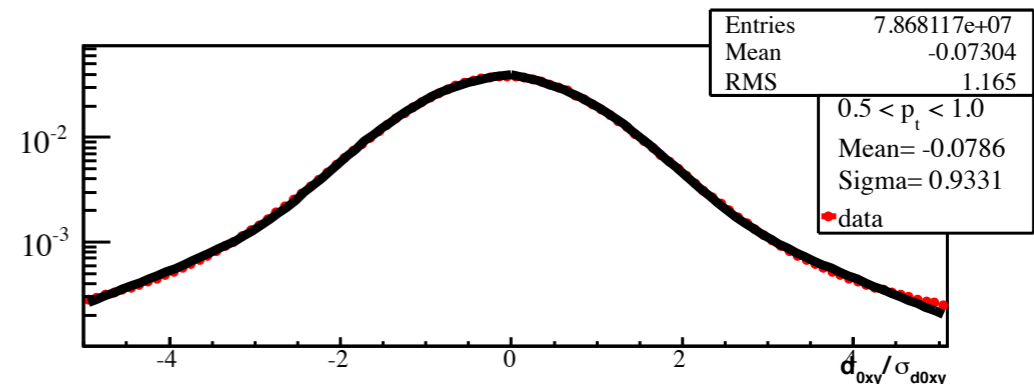
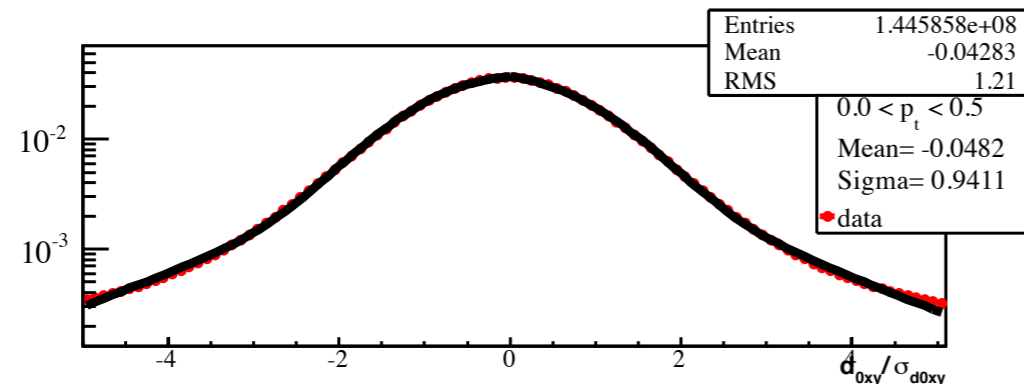
# $d_{0xy}$ distribution in Real and MC data for unidentified tracks



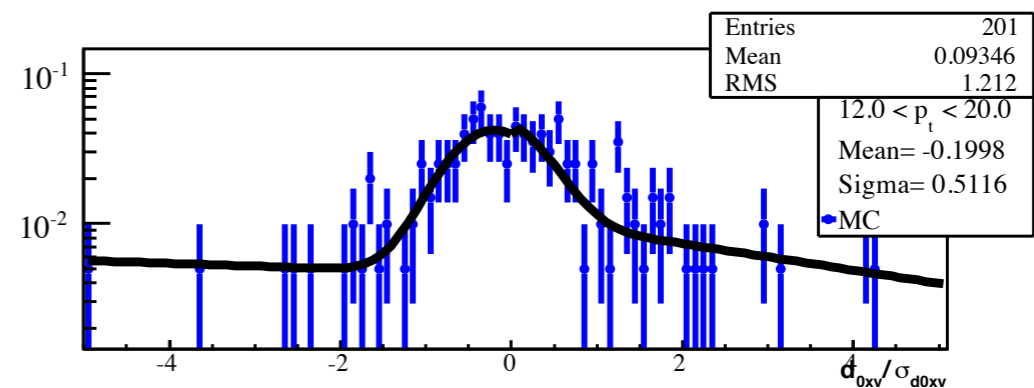
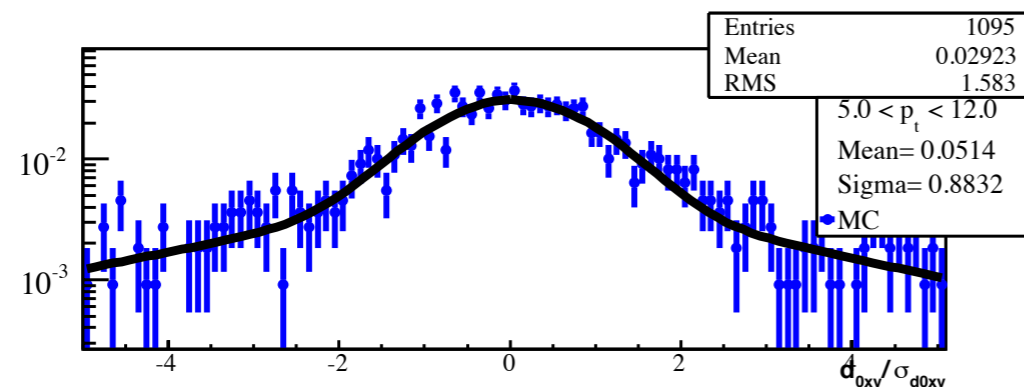
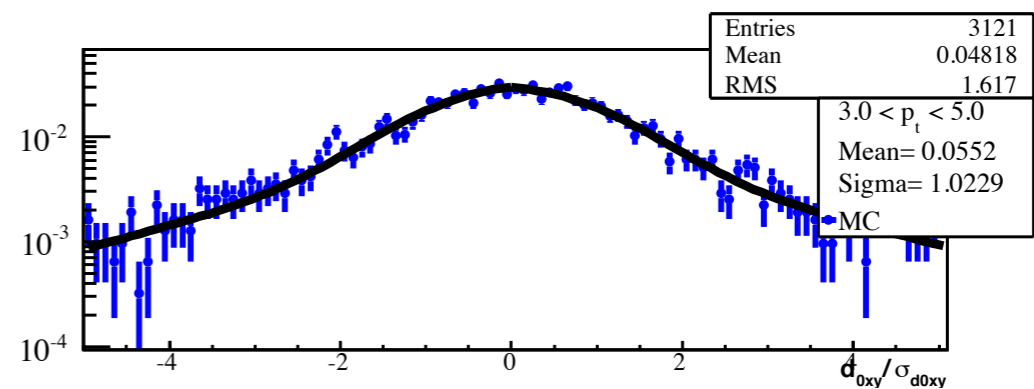
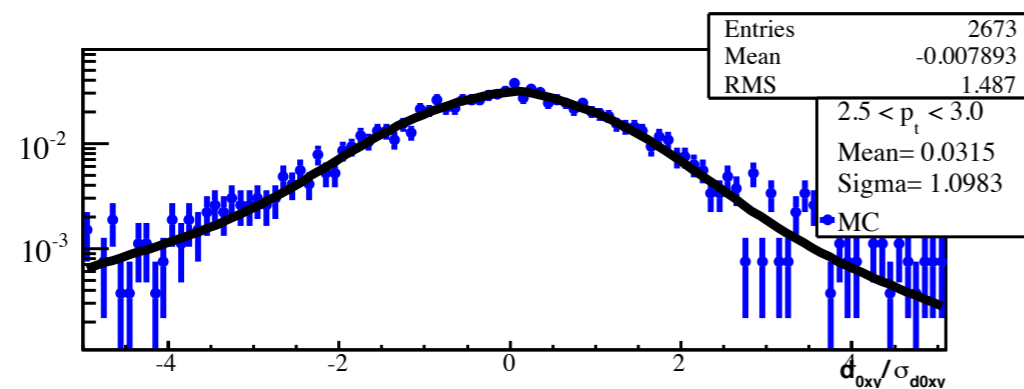
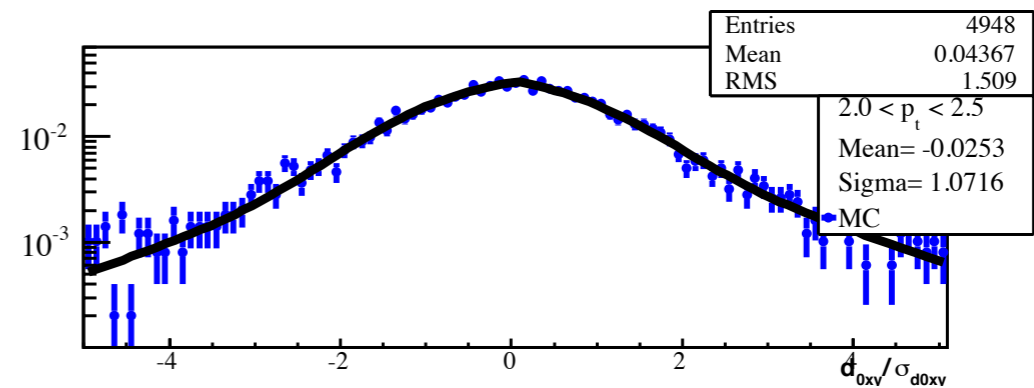
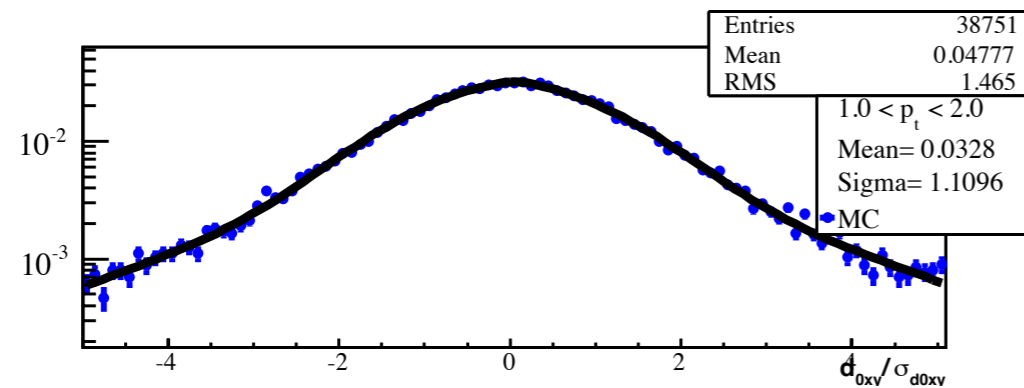
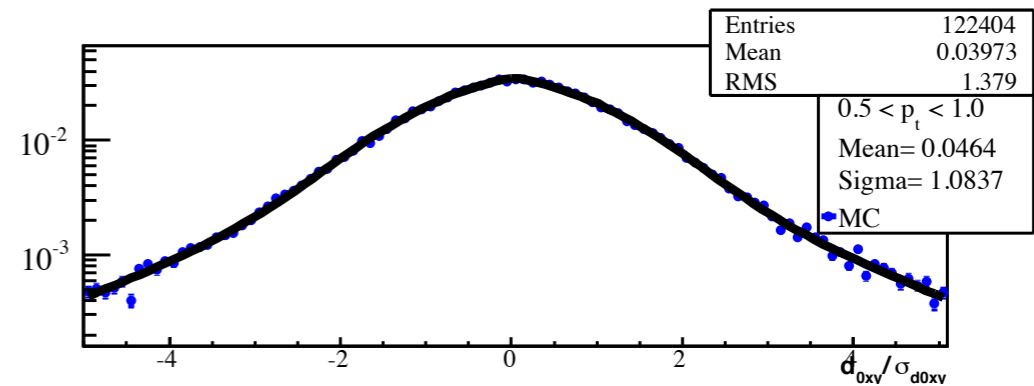
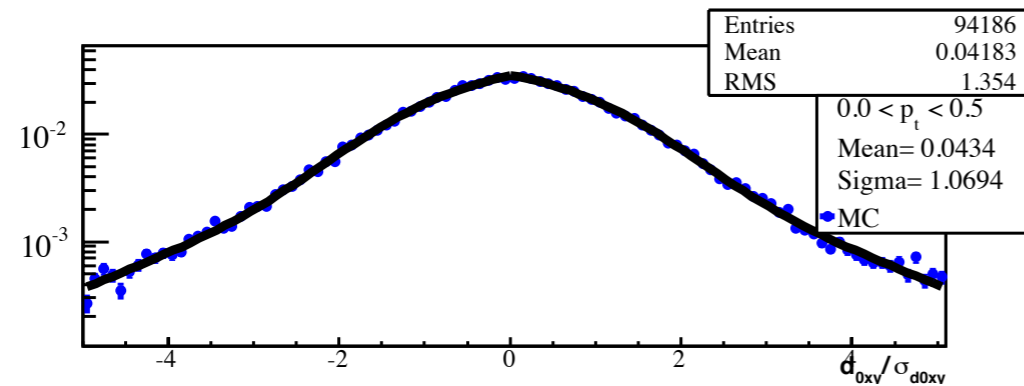
# $d_{0xy}/\sigma_{d0xy}$ Fit in MC data for unidentified tracks



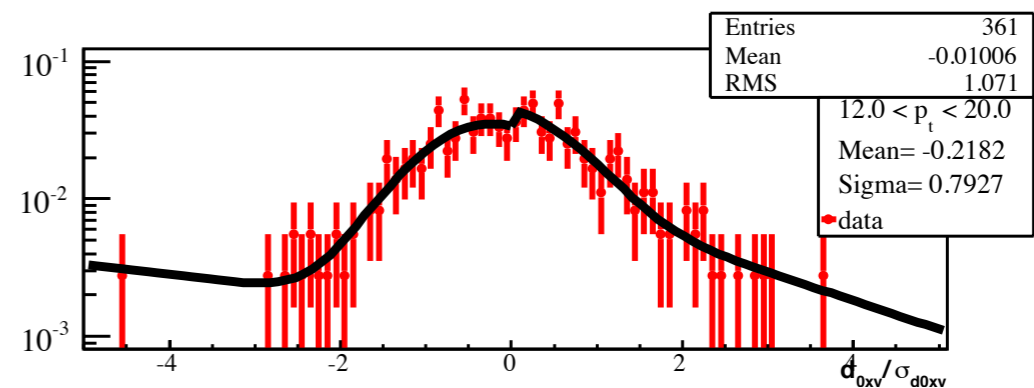
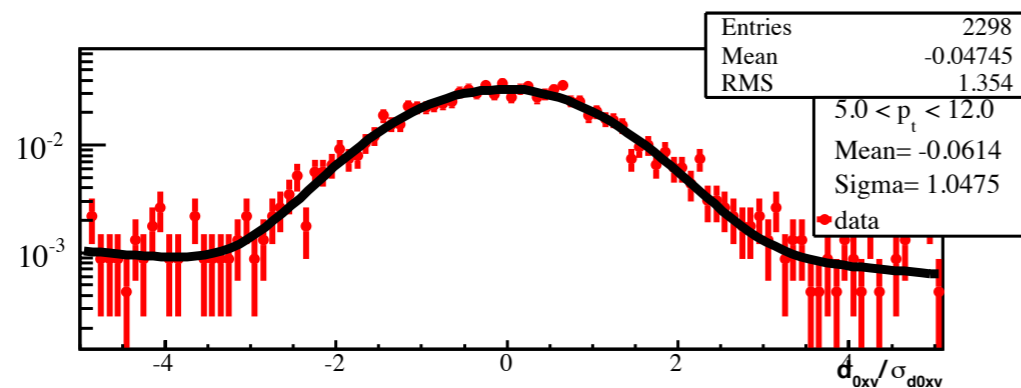
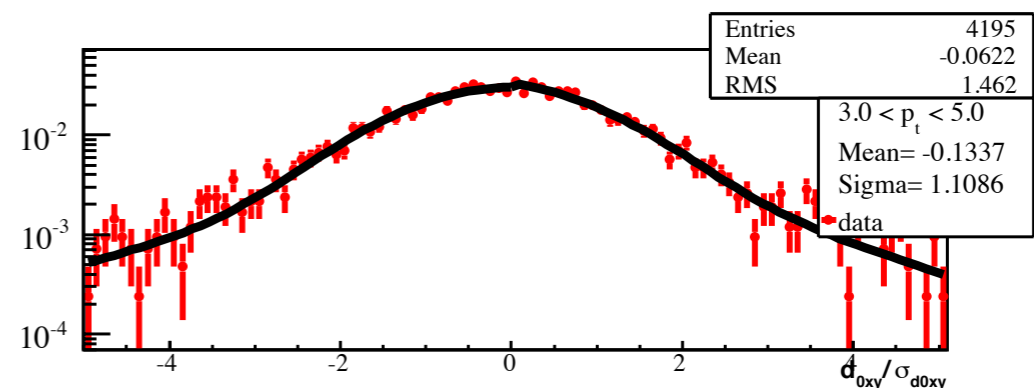
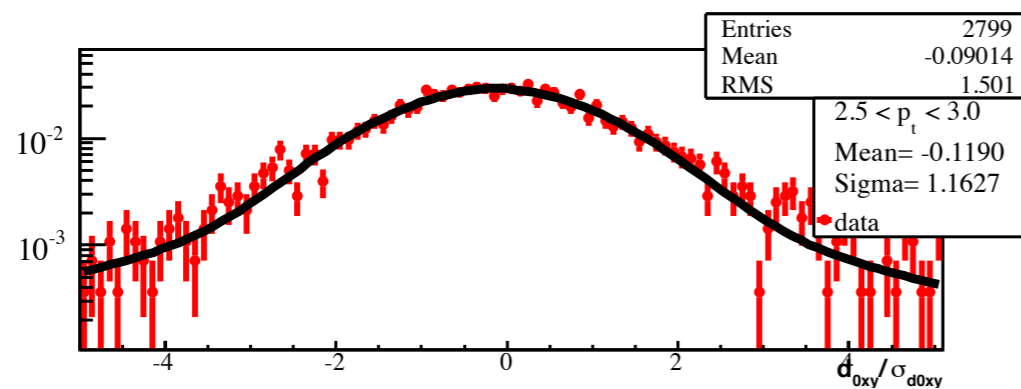
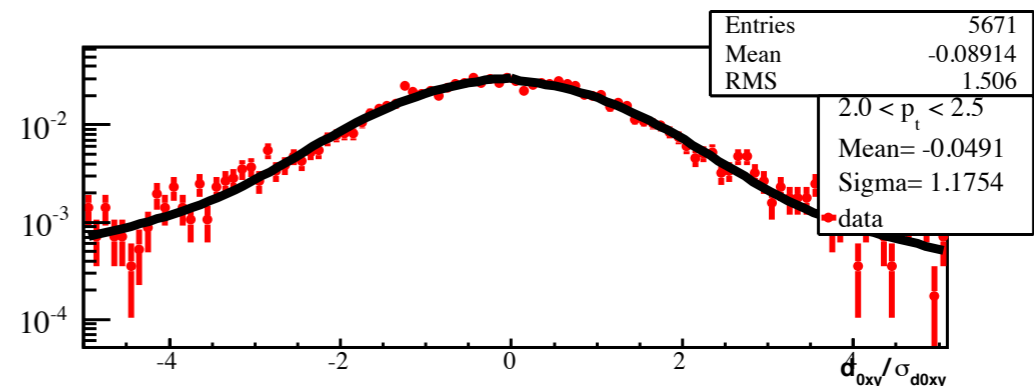
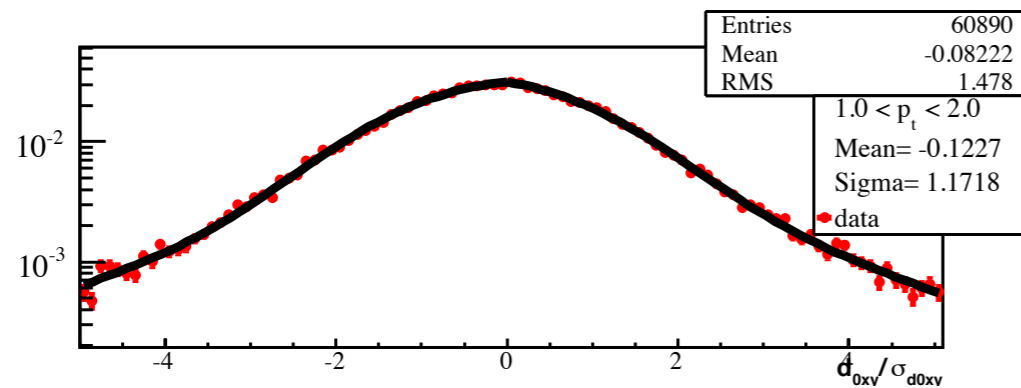
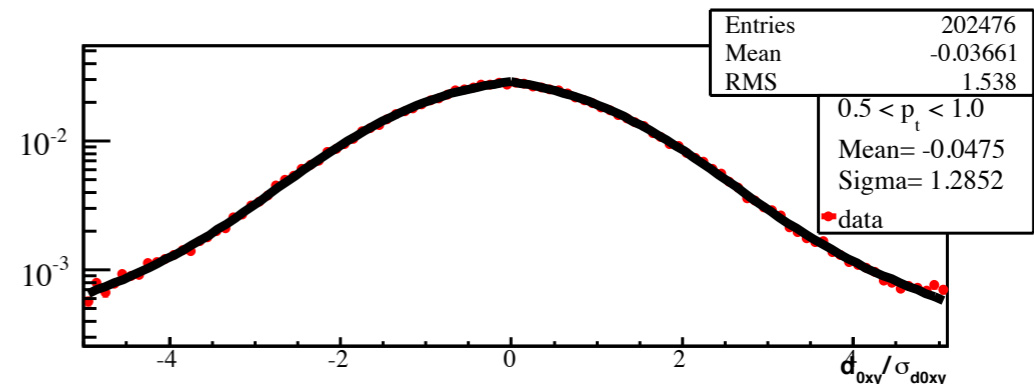
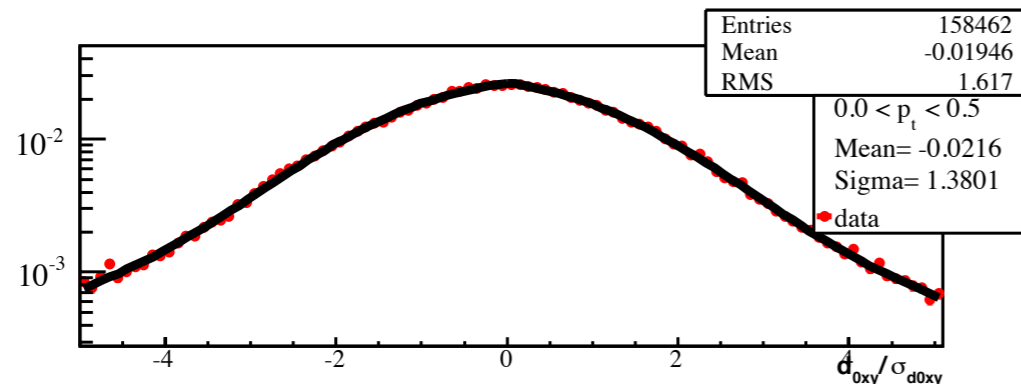
# $d_{0xy}/\sigma_{d0xy}$ Fit in real data for unidentified tracks



# $d_{0xy}/\sigma_{d0xy}$ Fit in MC data for electron candidates



# $d_{0xy}/\sigma_{d0xy}$ Fit in real data for electron candidates



# Method to retrieve $d_{0xy}$ and $d_{0xy}/\sigma_{d_{0xy}}$

---

- `// obtain impact parameters in xy and z`
- `Float_t magneticField = 5; // initialized as 5kG`
- `magneticField = fESD->GetMagneticField(); // in kG`
- `Double_t beampiperadius=3.;`
- `const AliESDVertex *primVtx = fESD->GetPrimaryVertex();`
  
- `// excluding current track`
- `// ---- beginning --- method from Andrea D 28.05.2010`
- `AliVertexerTracks *vertexer = new AliVertexerTracks(magneticField);`
- `vertexer->SetITSMODE();`
- `vertexer->SetMinClusters(4);`
- `Int_t skipped[2];`
- `skipped[0] = (Int_t)track->GetID();`
- `vertexer->SetSkipTracks(1,skipped);`
- `AliESDVertex *vtxESDSkip = (AliESDVertex*)vertexer->FindPrimaryVertex(fESD);`
- `delete vertexer; vertexer = NULL;`
- `if(vtxESDSkip->GetNContributors()<2) return;`
- `// -- ending --- method from Andrea D 28.05.2010`
- 
- `// getting the DCA`
- `if(!track->PropagateToDCA(vtxESDSkip,magneticField, beampiperadius, dcah, covh)) return; // protection`



# Pull $r\phi$

