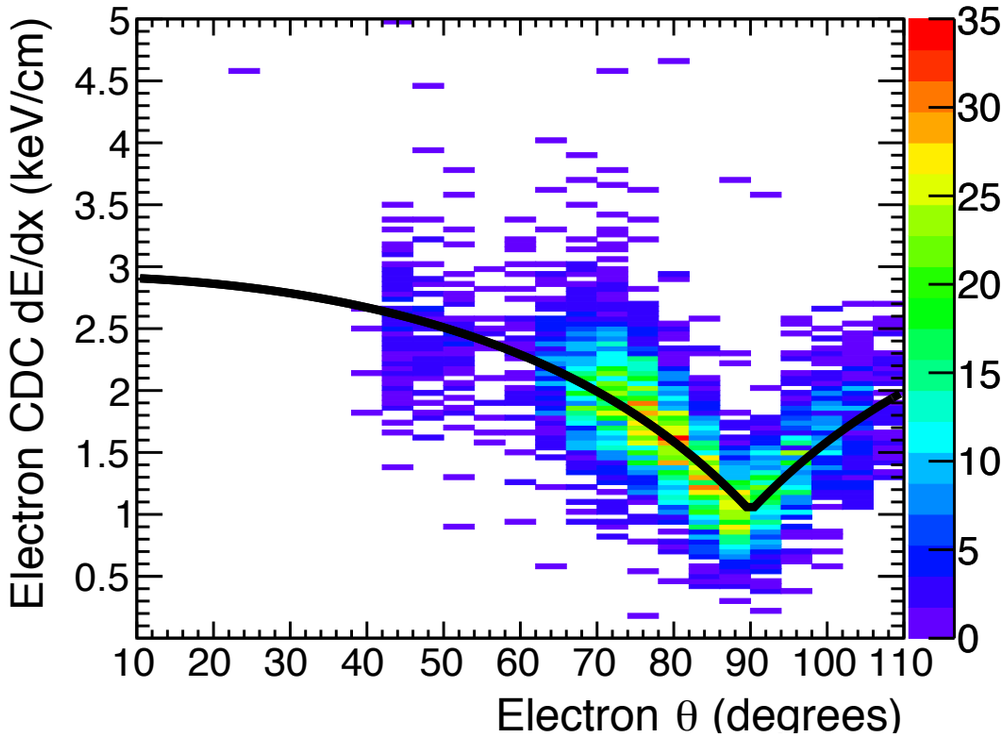
CDC dE/dx for e/π separation

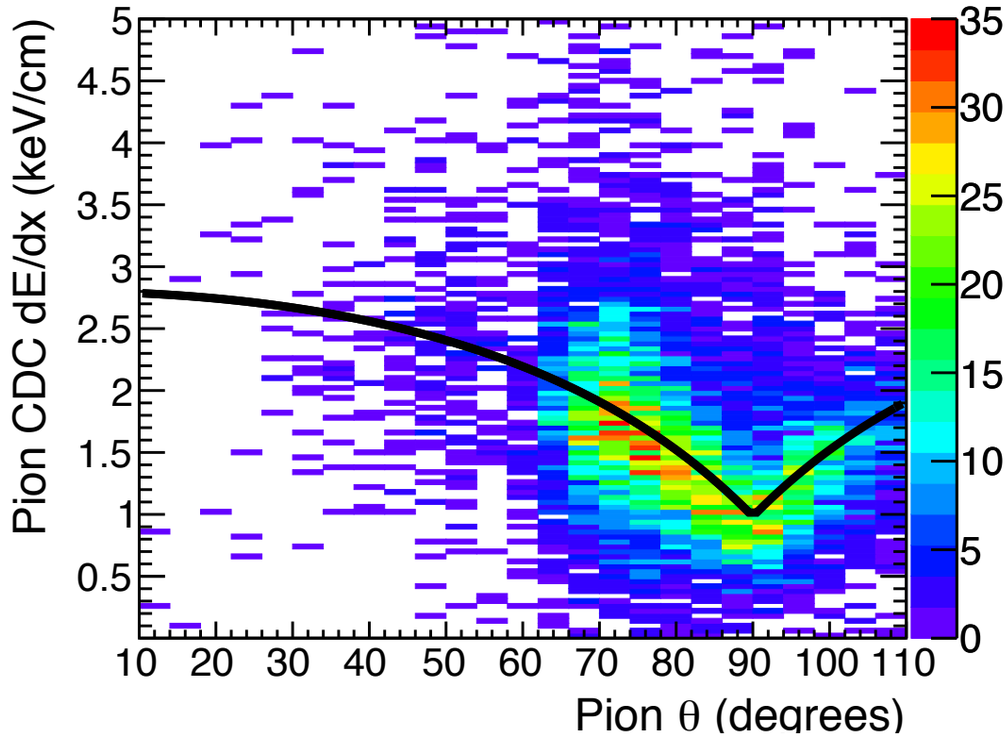
Justin Stevens

7.21.17

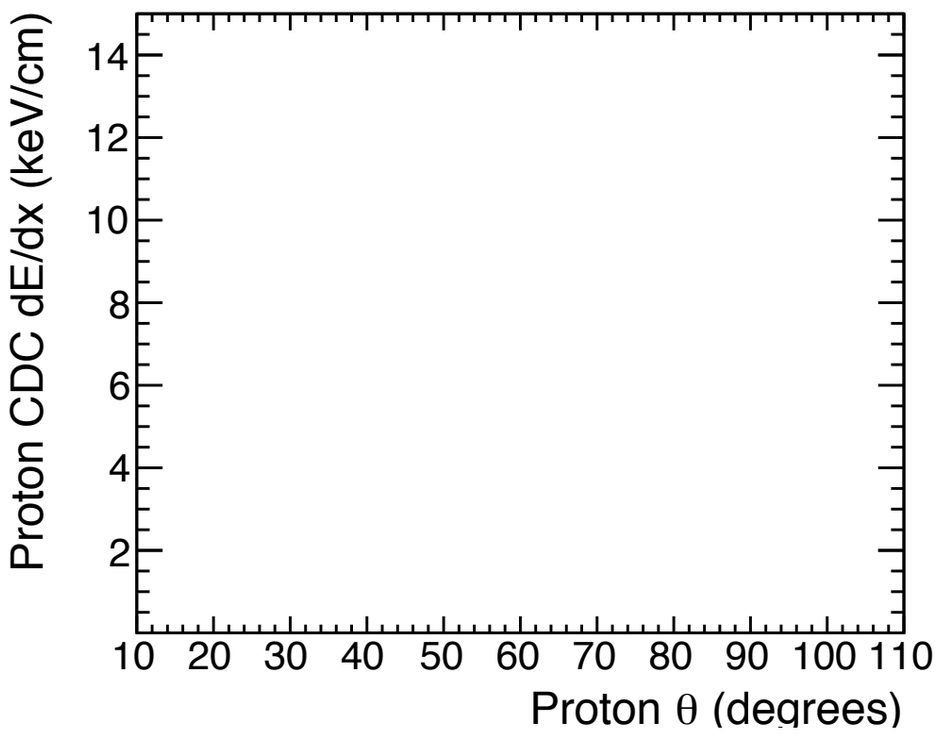
CDC dE/dx: p<0.2 GeV

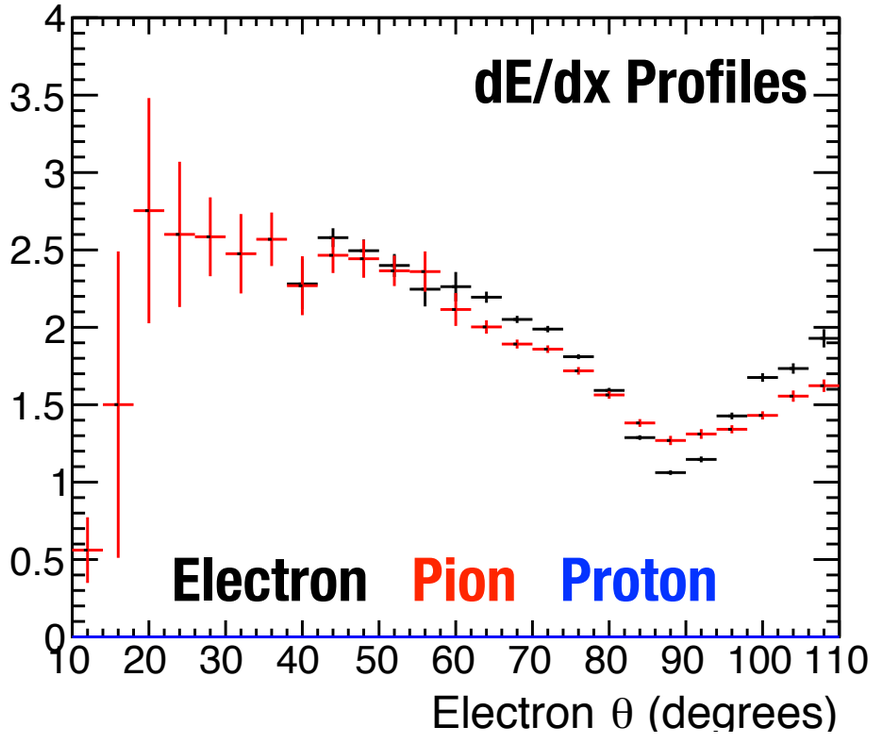
Black curve: Lubomir's model





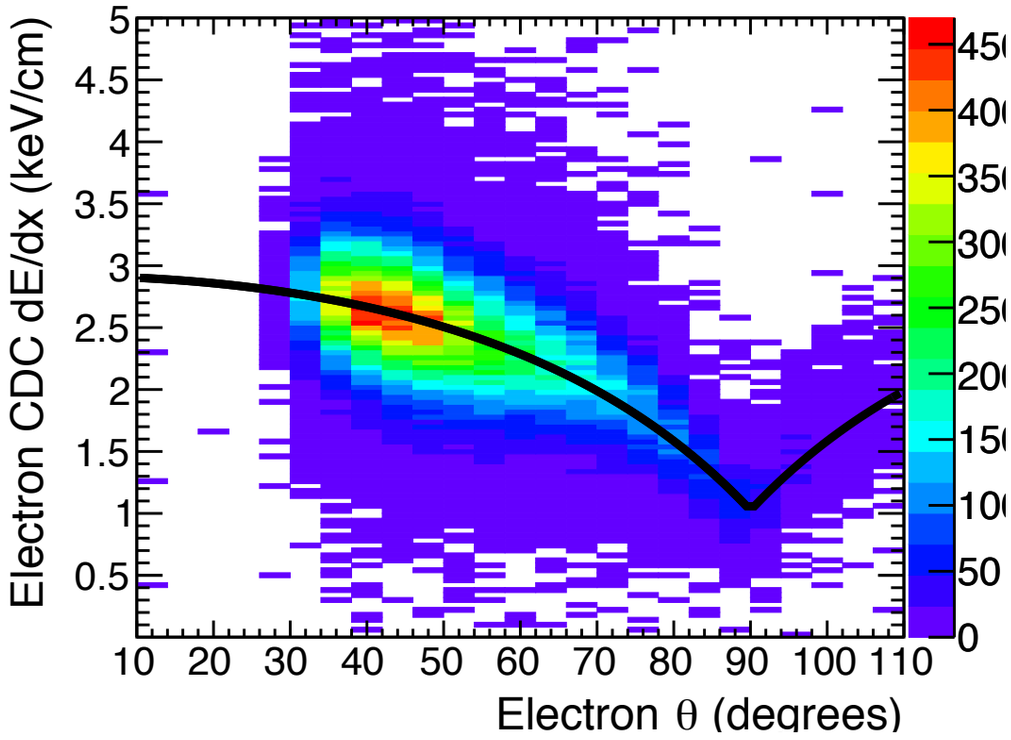
Note: different scale!

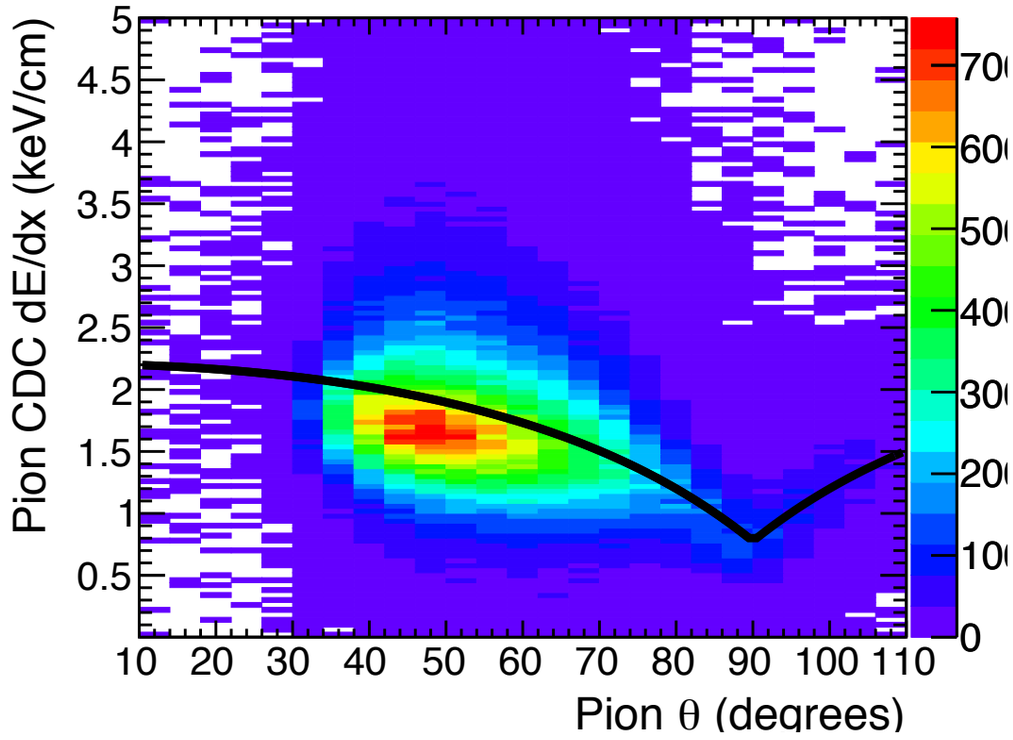




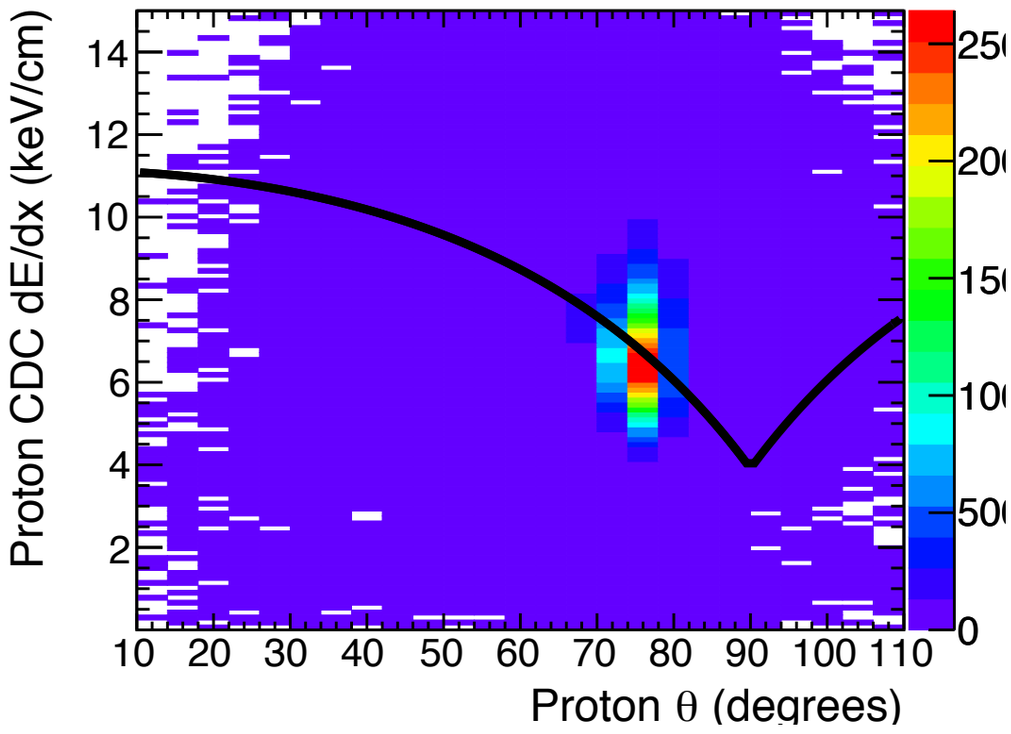
CDC dE/dx: 0.2<p<0.4 GeV

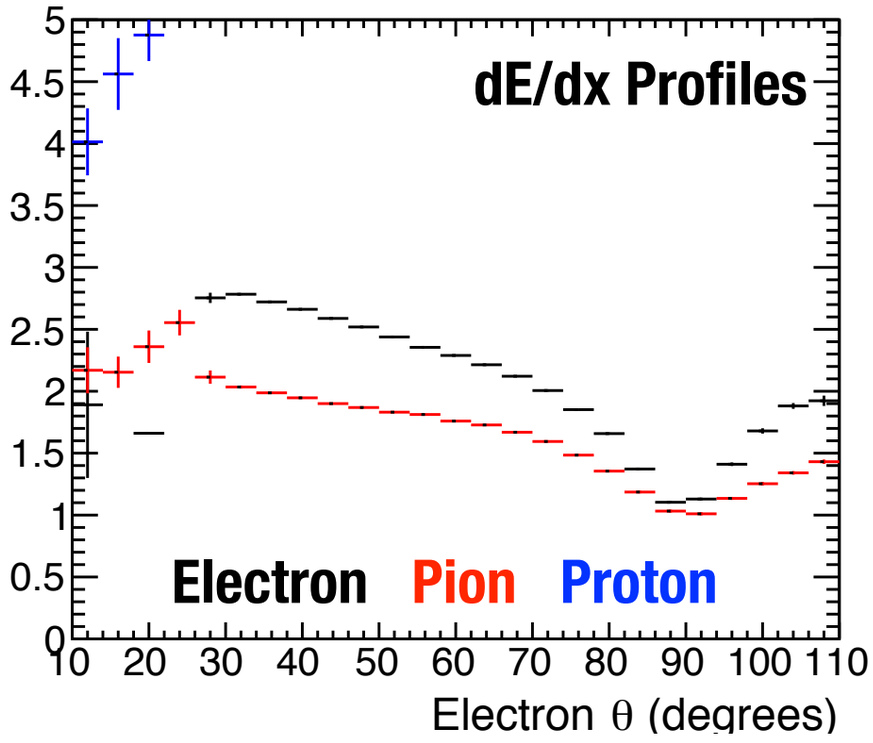
Black curve: Lubomir's model





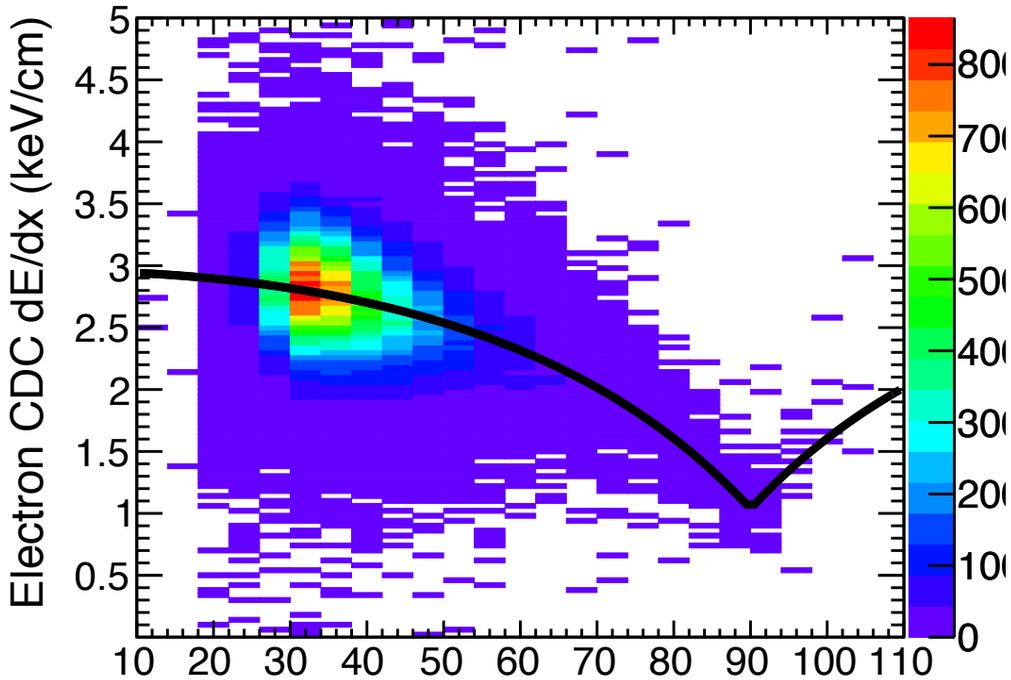
Note: different scale!

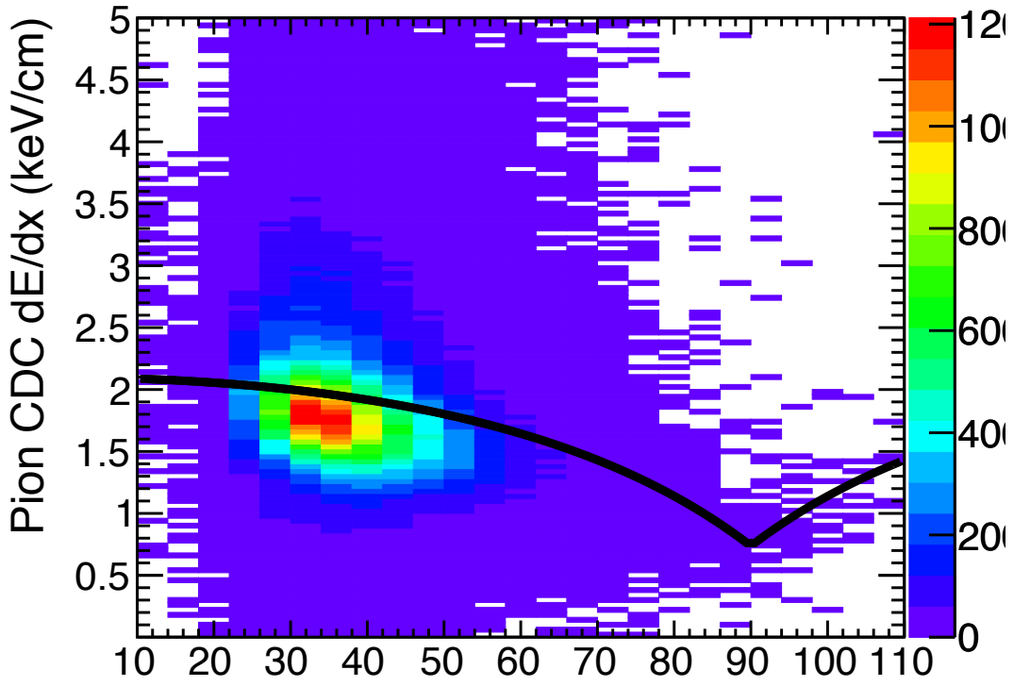




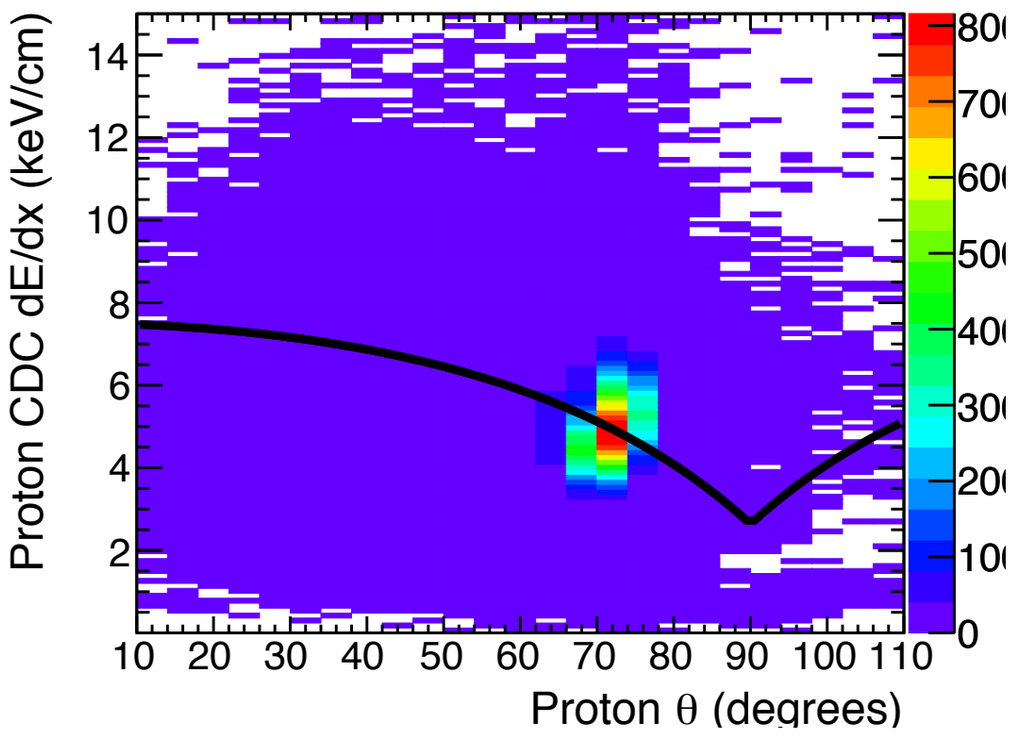
CDC dE/dx: 0.4<p<0.6 GeV

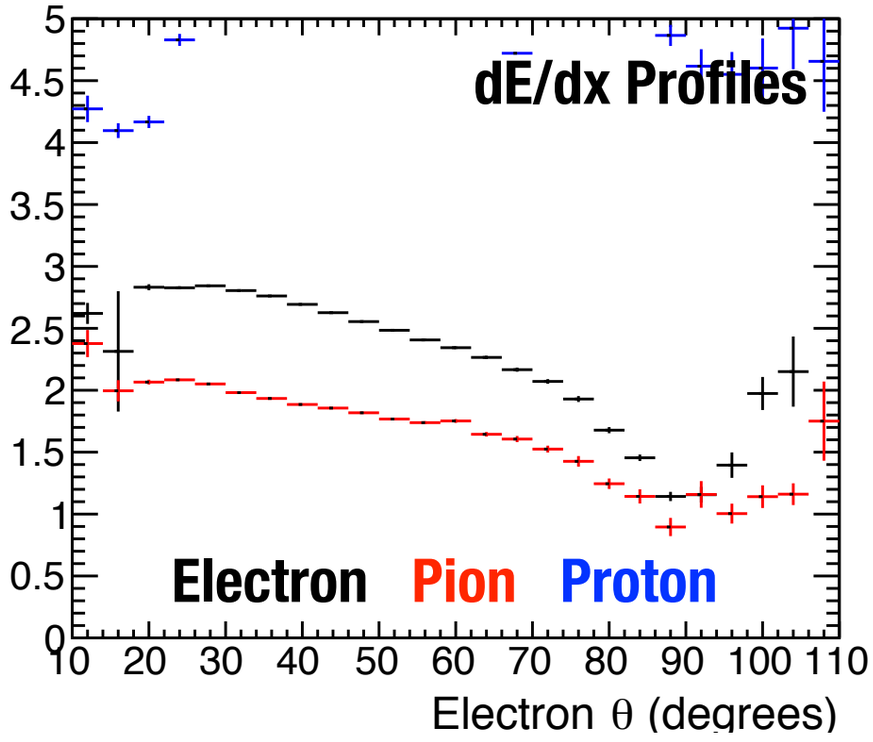
Black curve: Lubomir's model





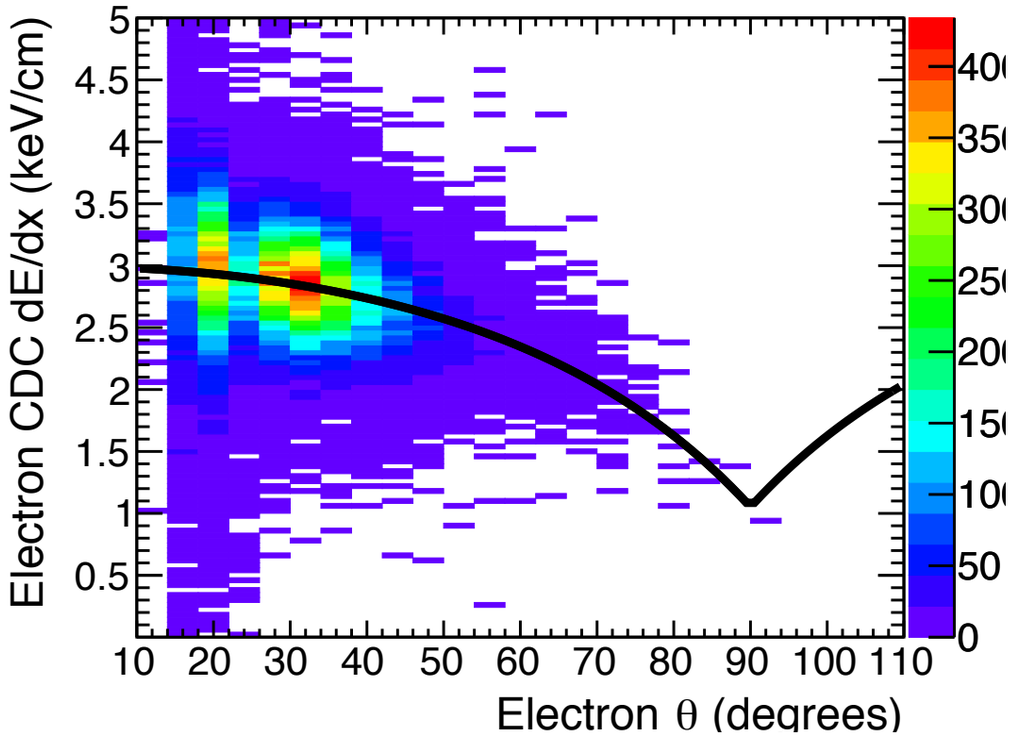
Note: different scale!

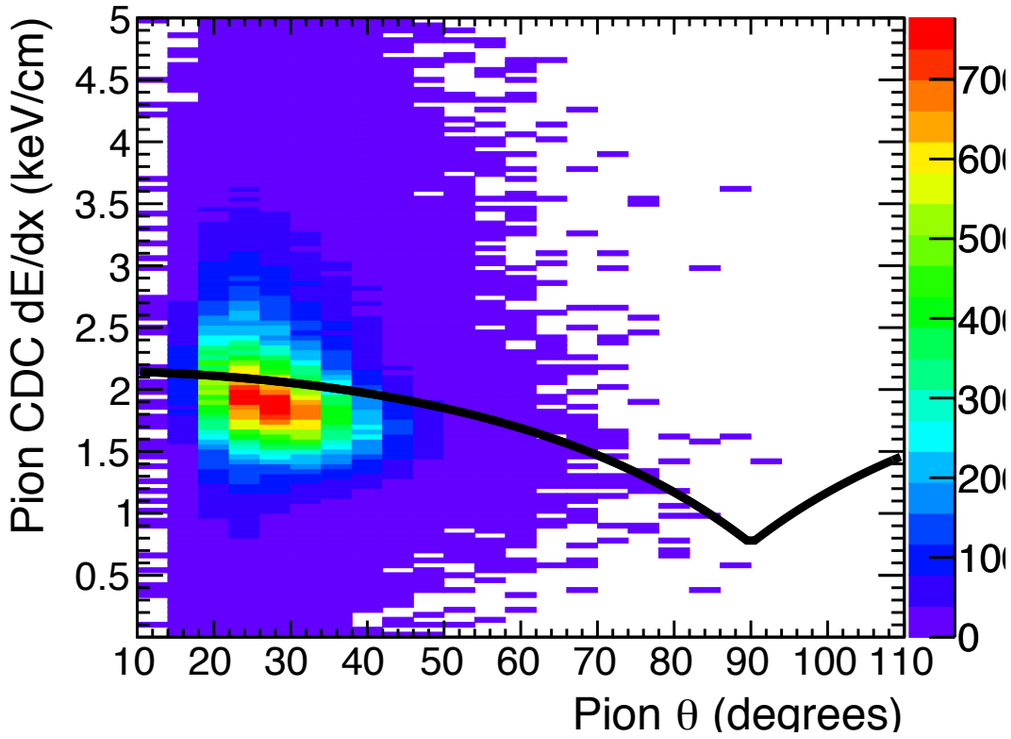




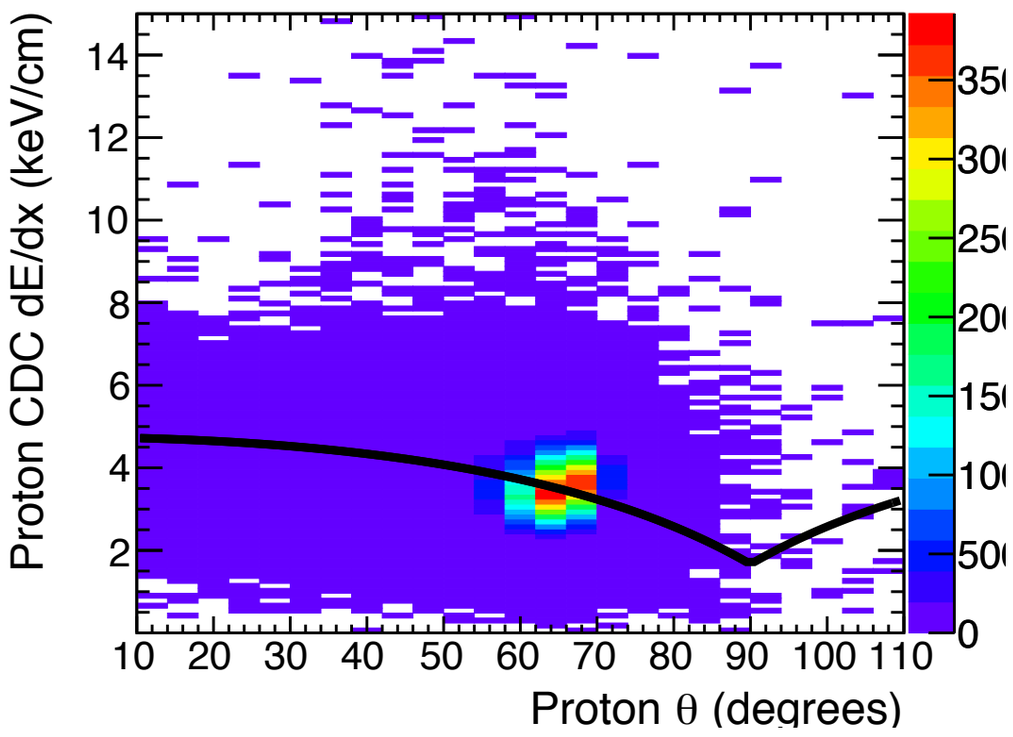
CDC dE/dx: 0.6<p<0.8 GeV

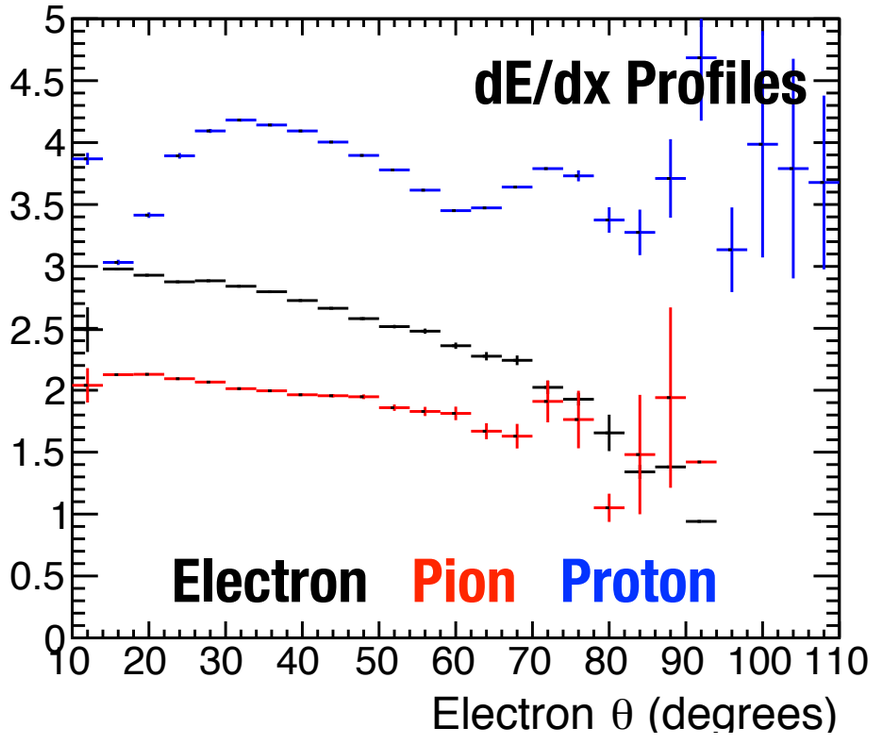
Black curve: Lubomir's model





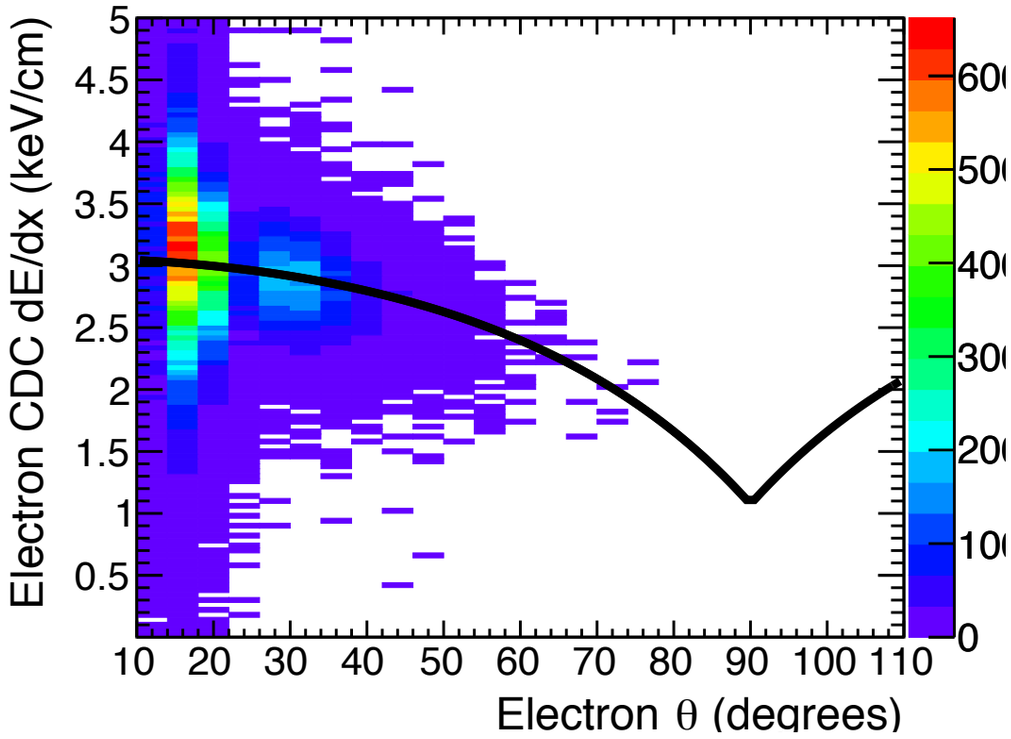
Note: different scale!

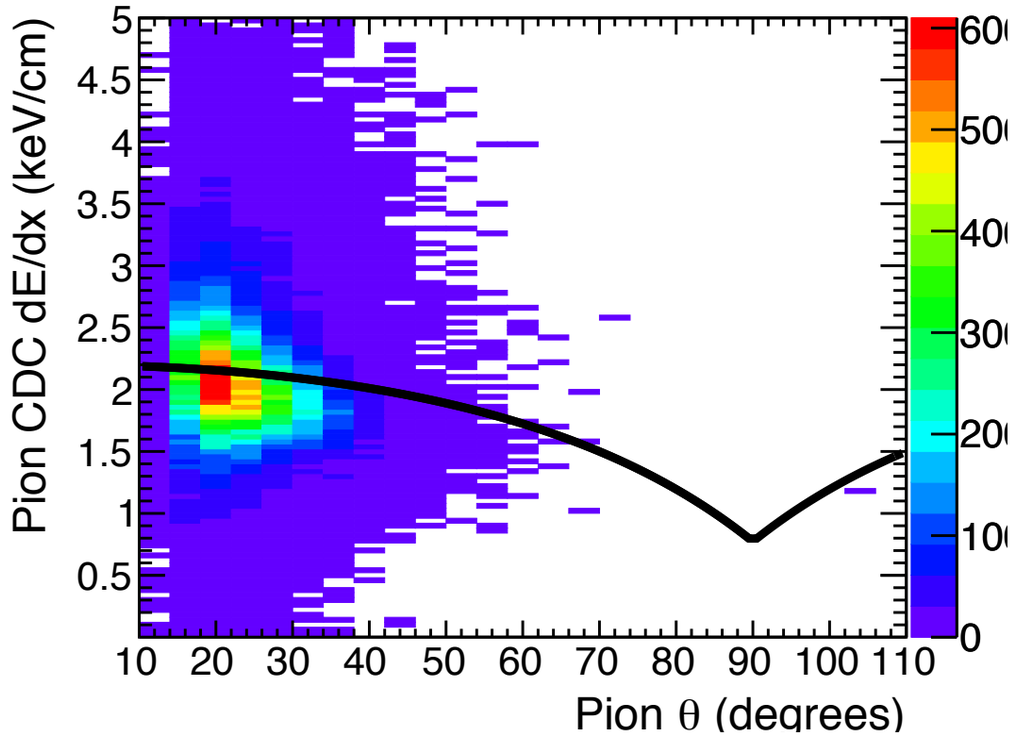




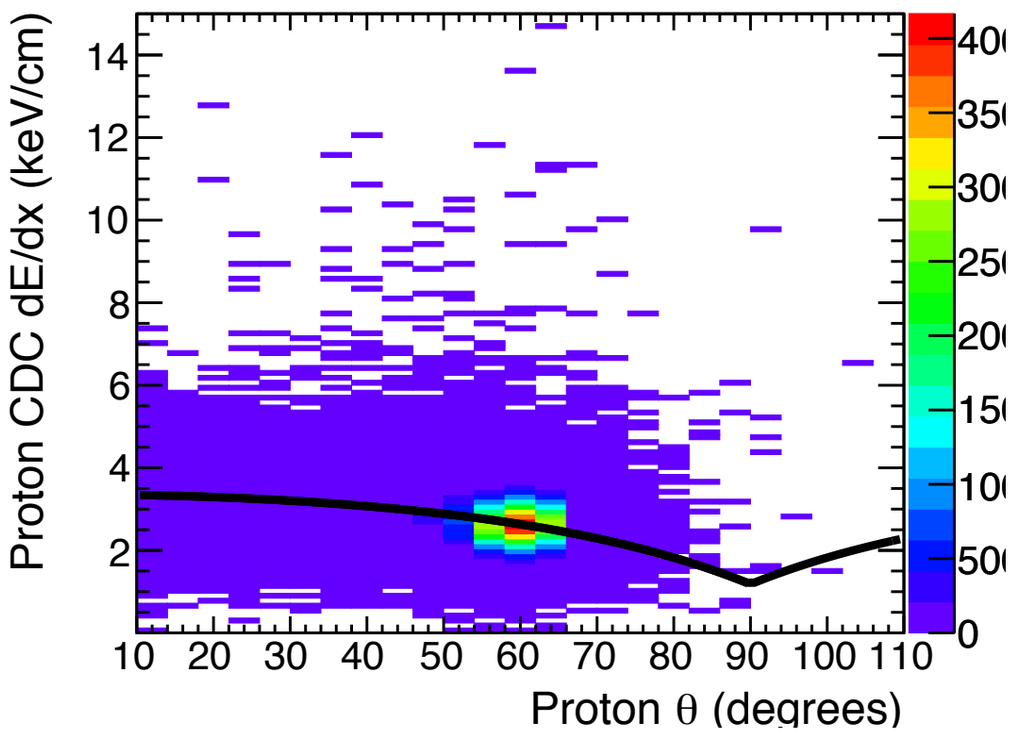
CDC dE/dx: 0.8<p<1.0 GeV

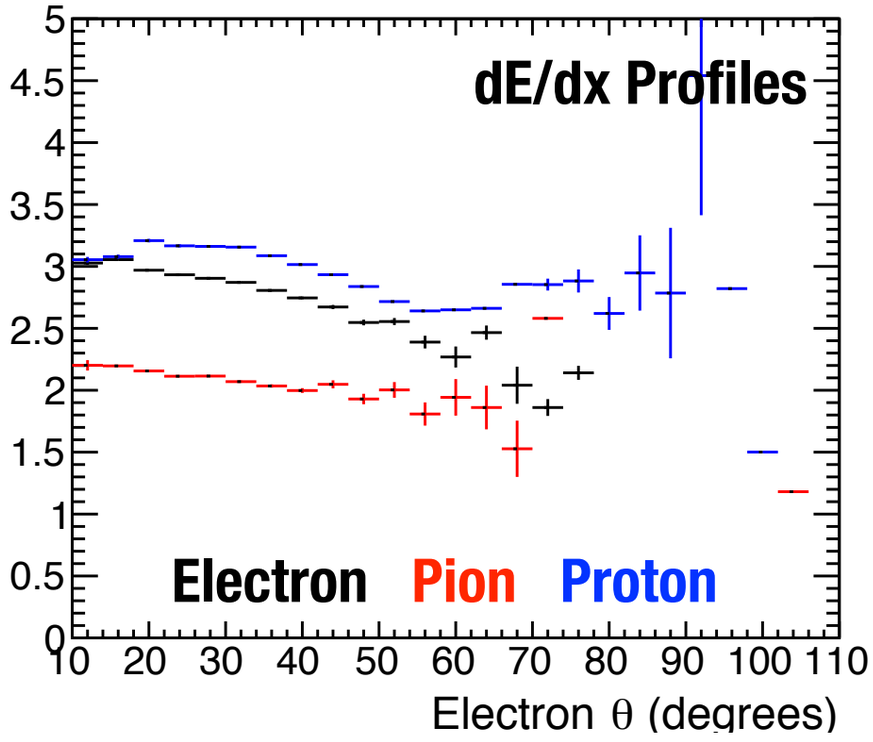
Black curve: Lubomir's model





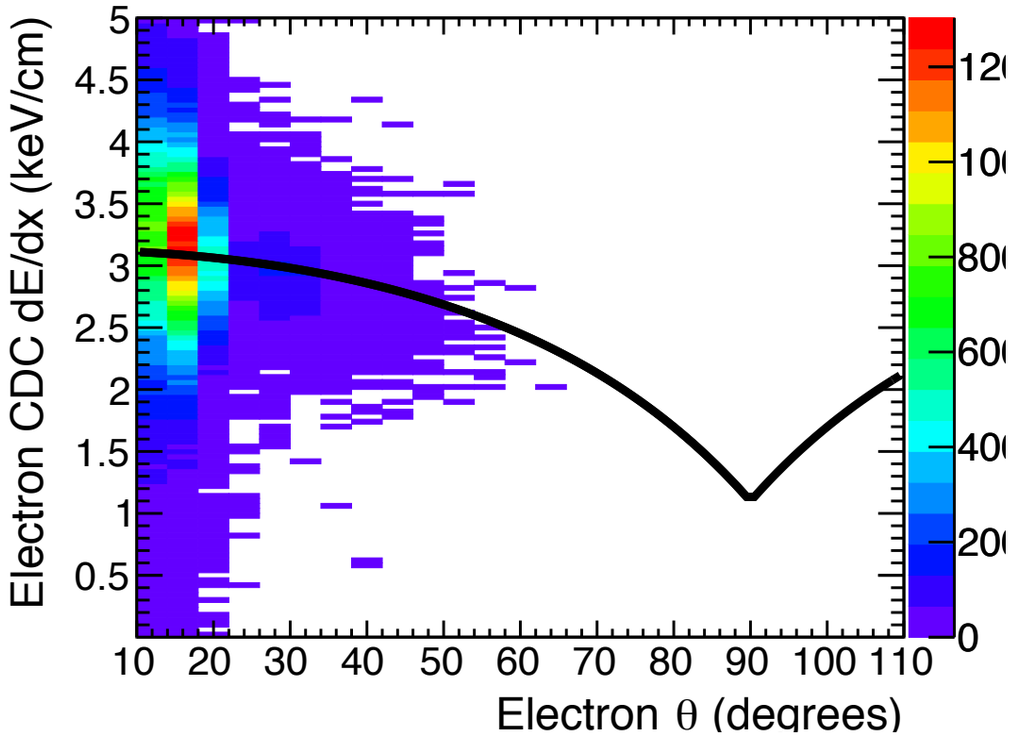
Note: different scale!

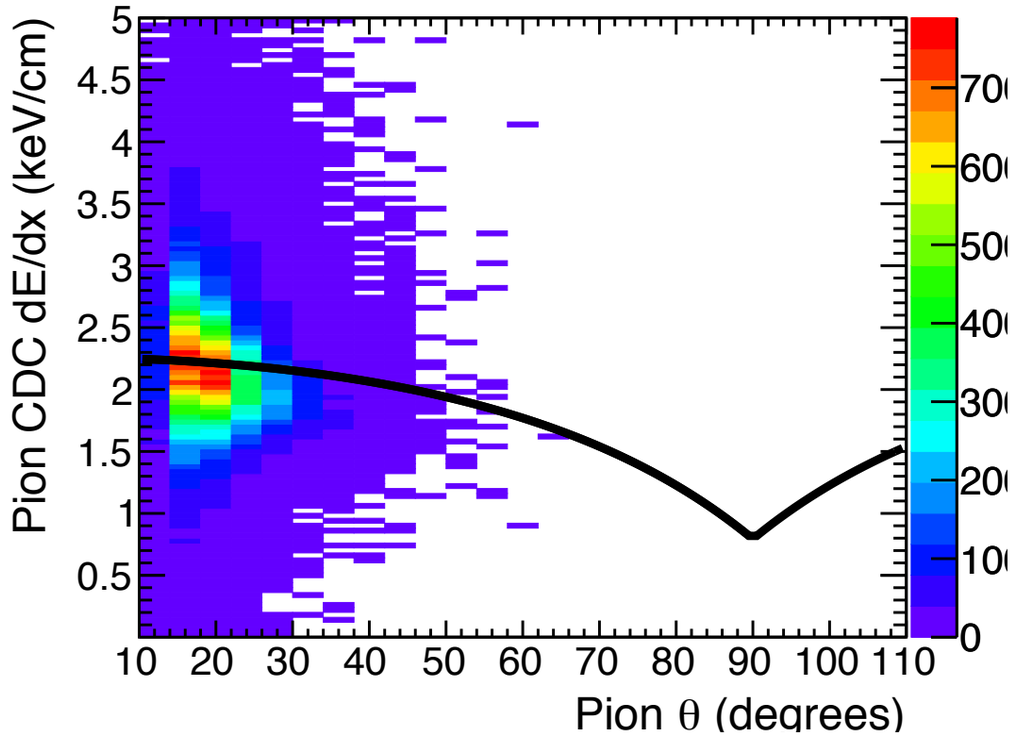




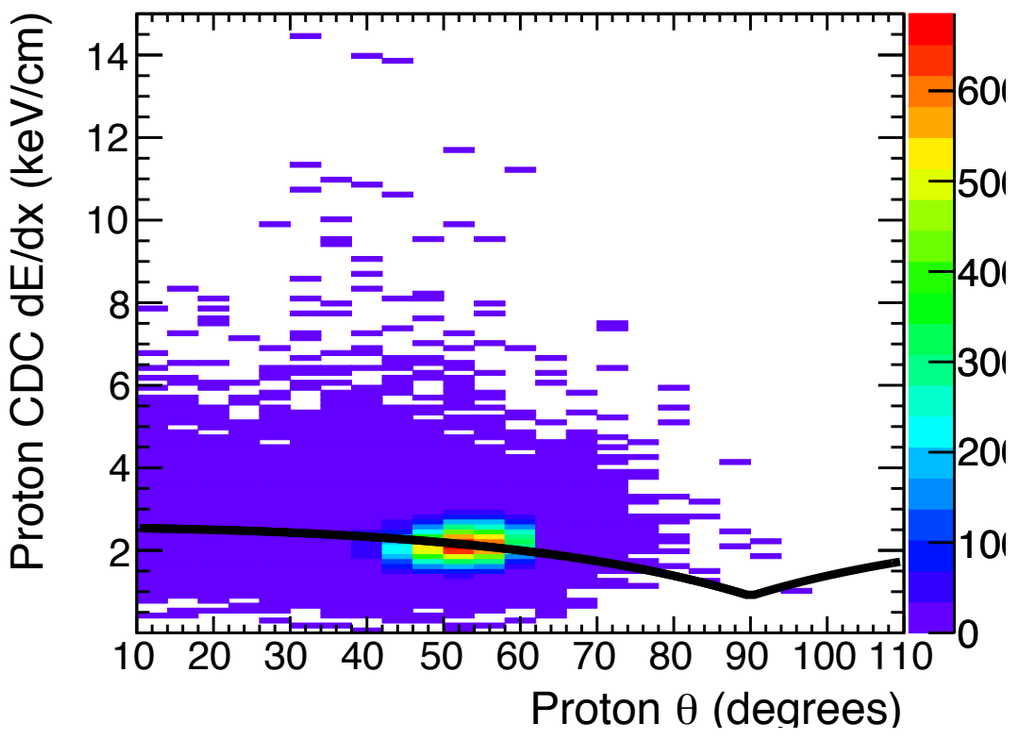
CDC dE/dx: 1.0<p<1.5 GeV

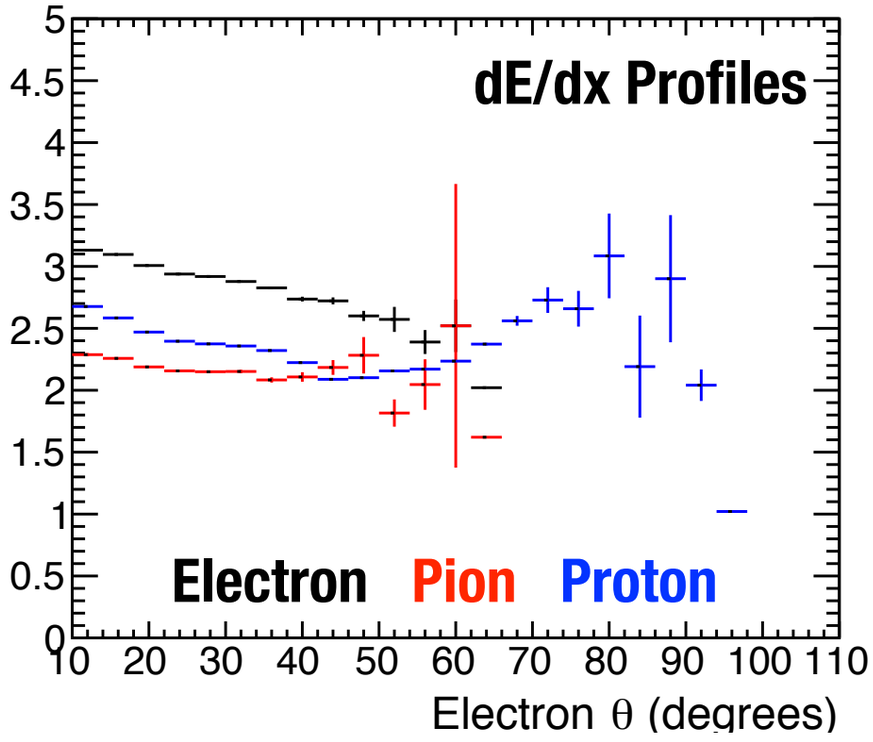
Black curve: Lubomir's model





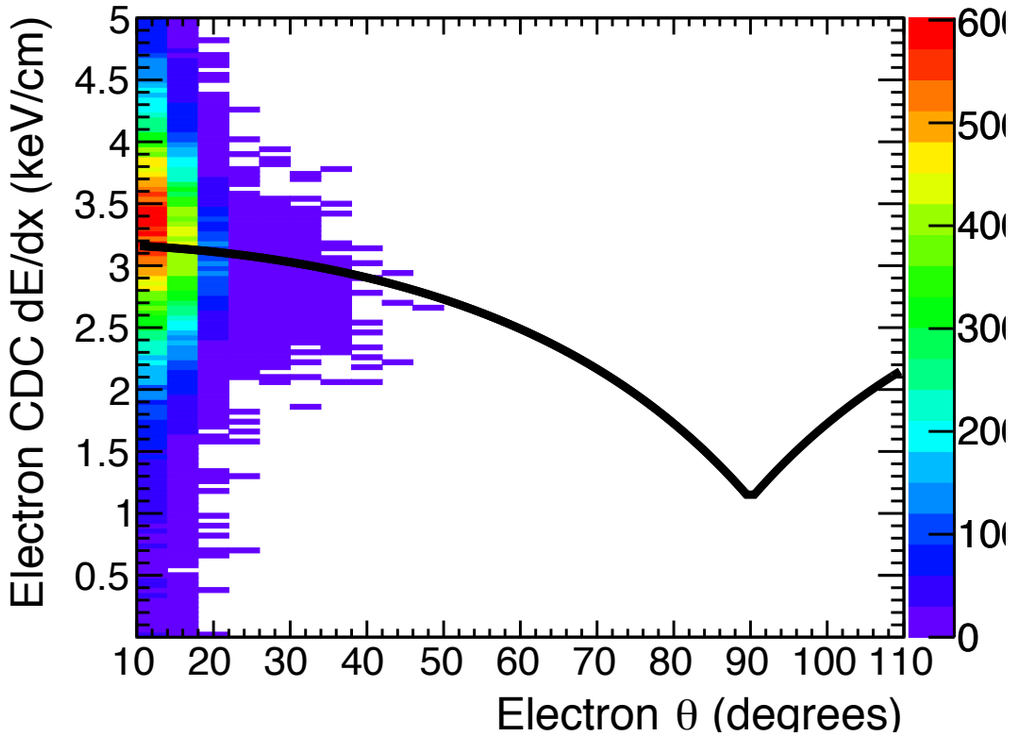
Note: different scale!

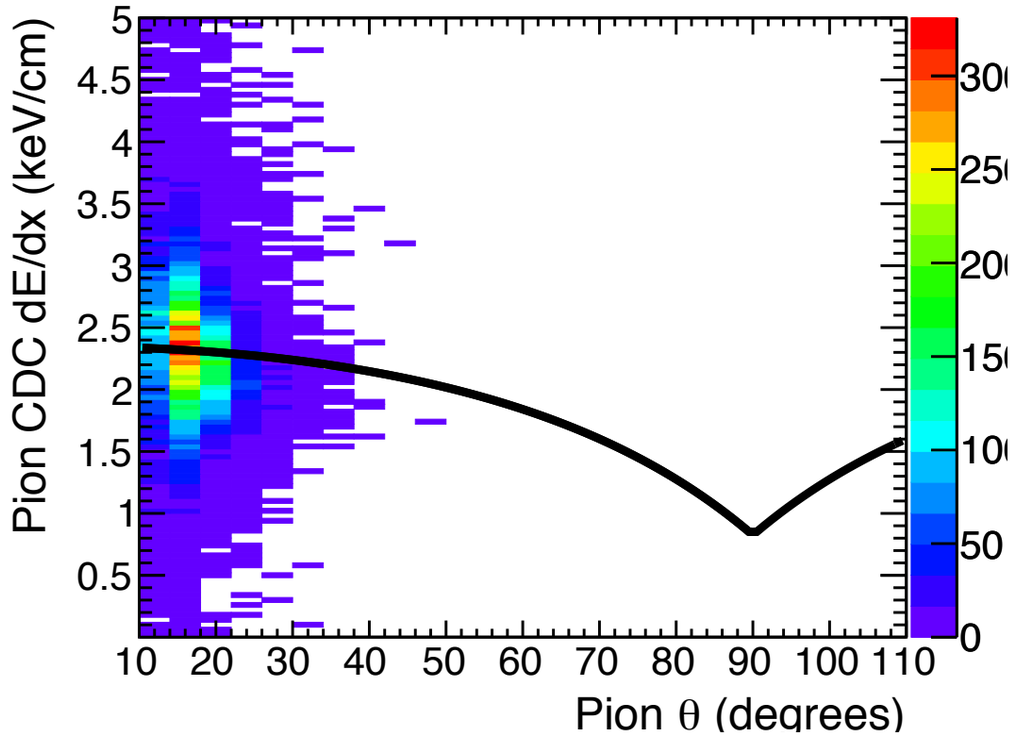




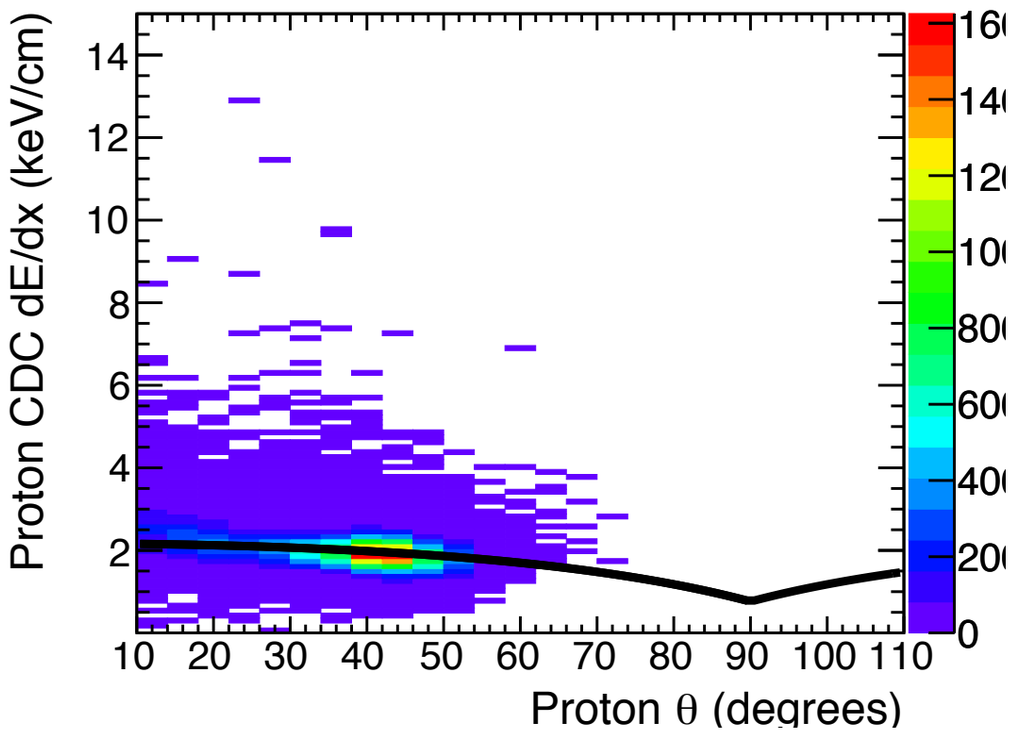
CDC dE/dx: 1.5<p<2.0 GeV

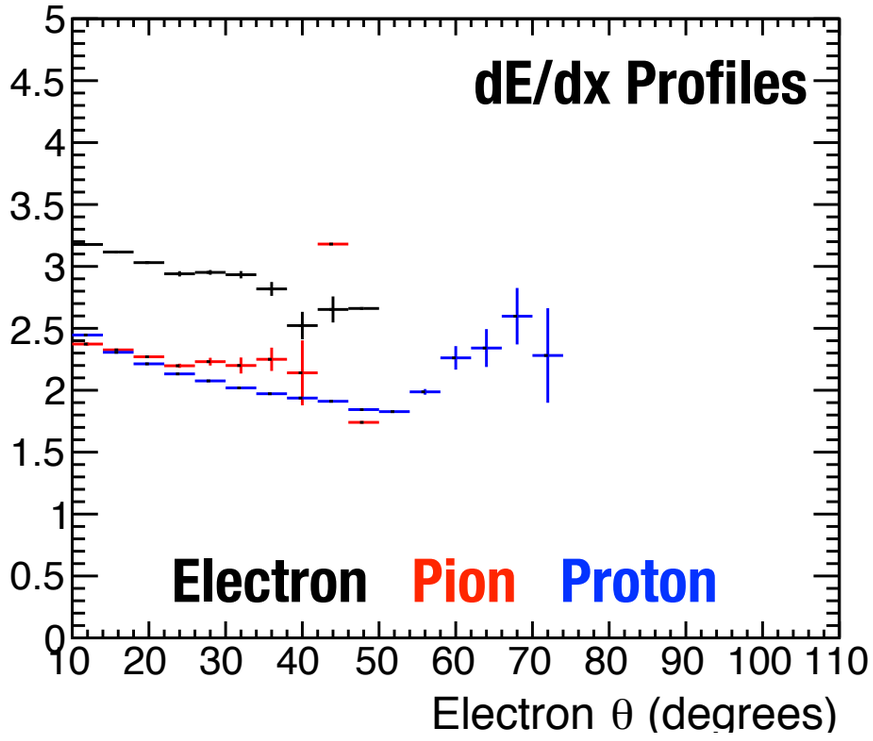
Black curve: Lubomir's model





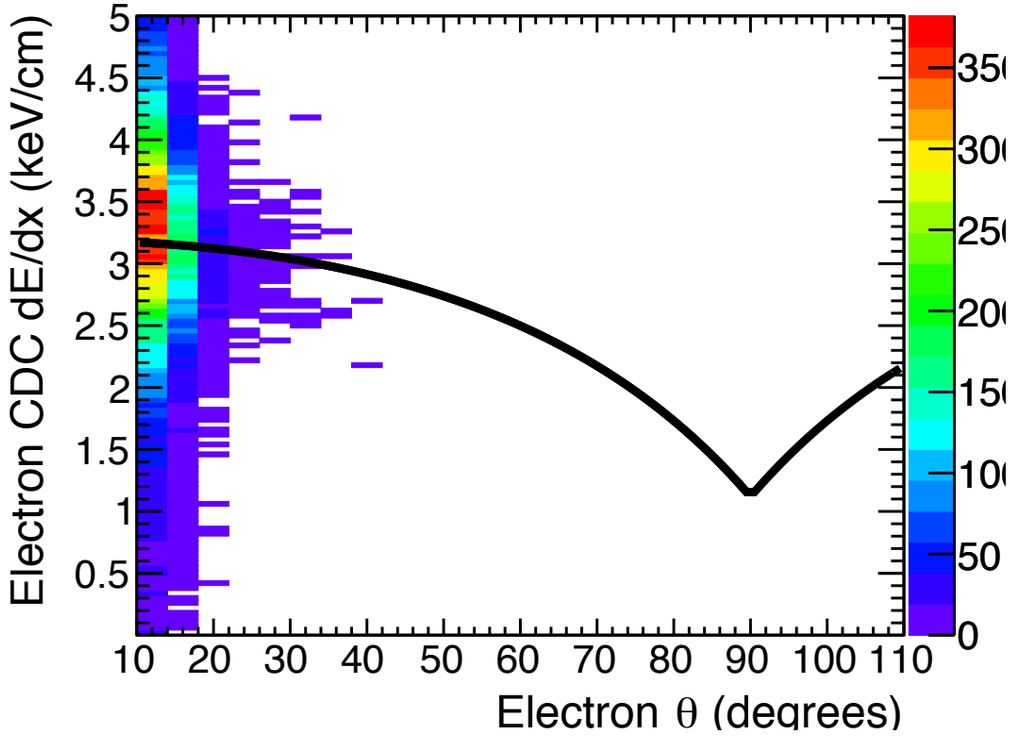
Note: different scale!

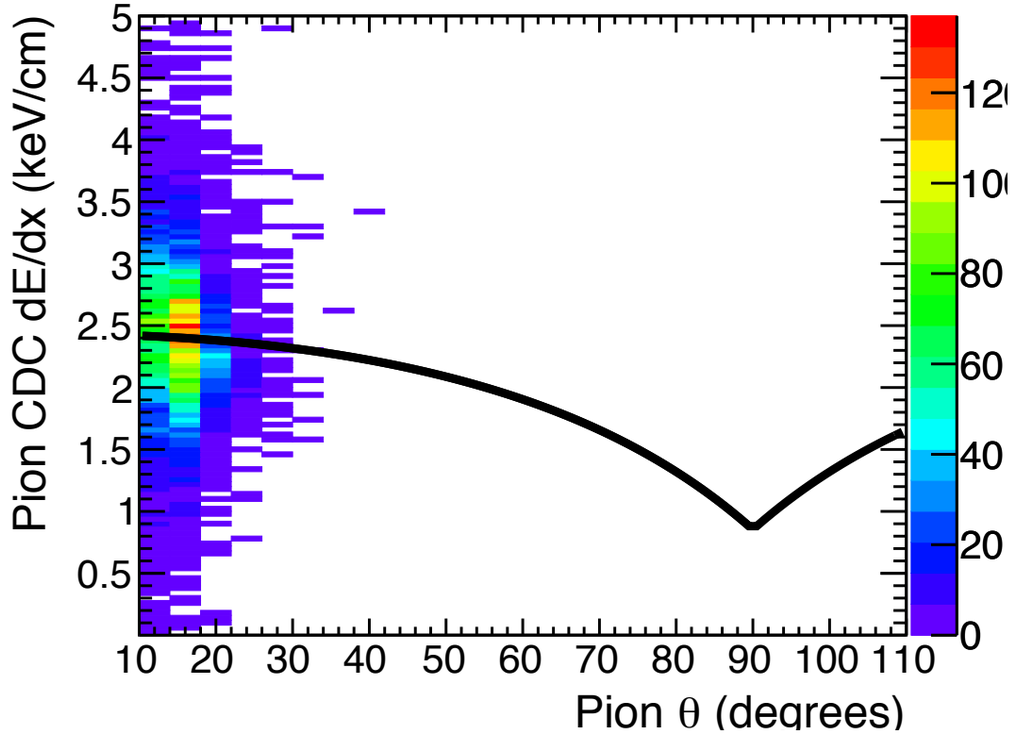




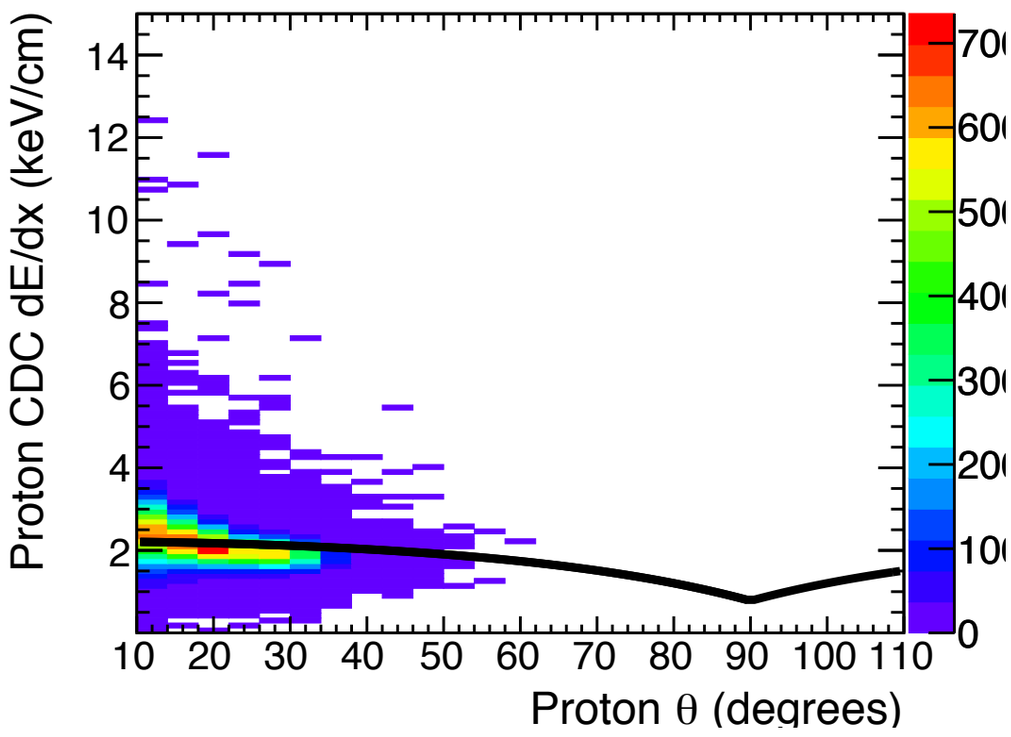
CDC dE/dx: 2.0<p<3.0 GeV

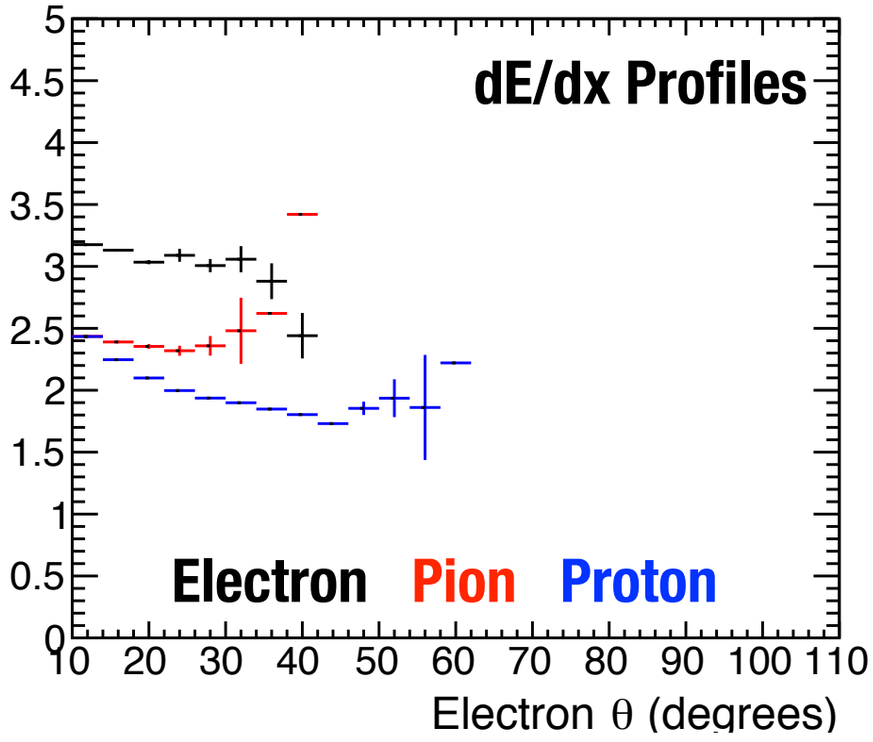
Black curve: Lubomir's model





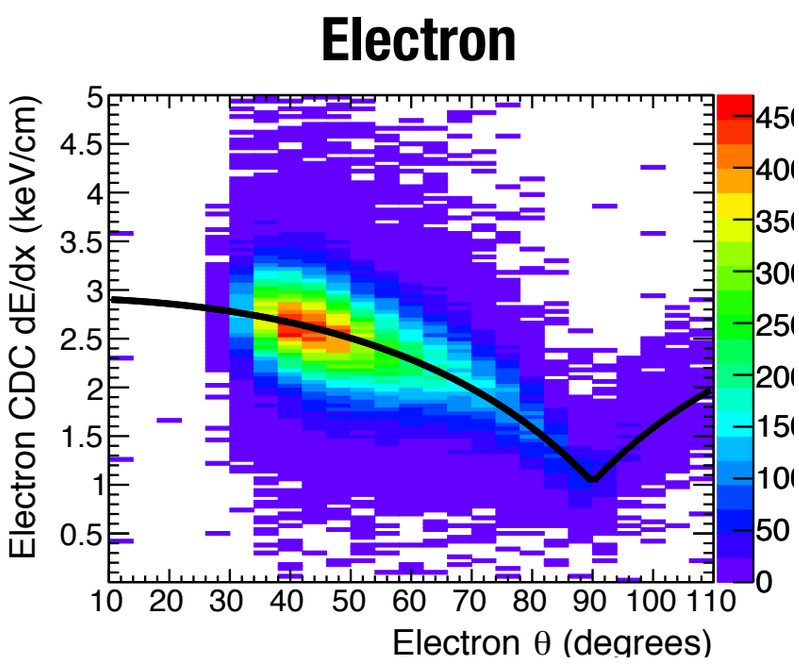
Note: different scale!

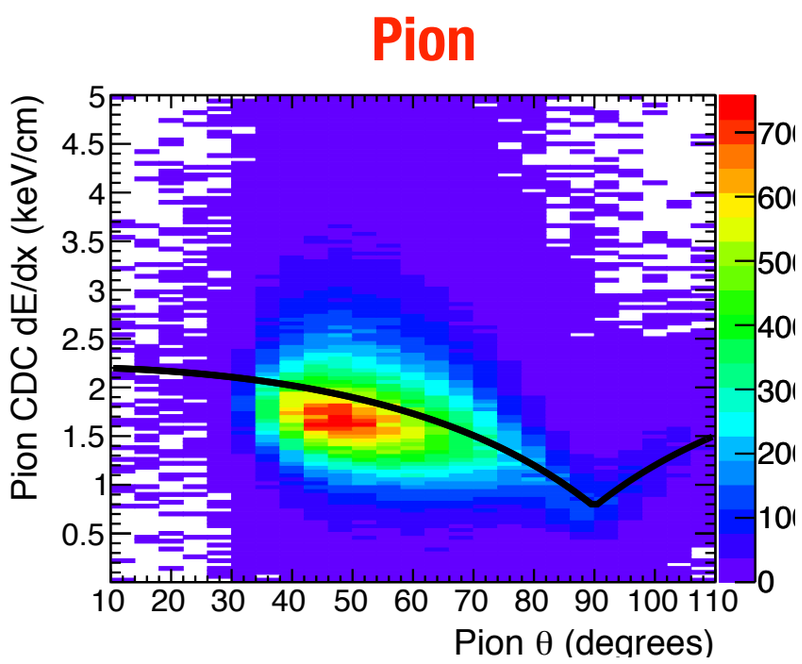


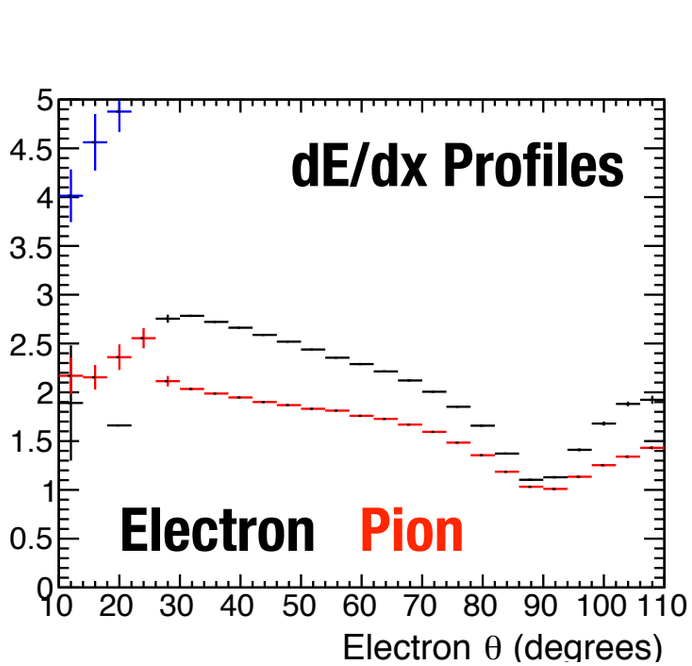


CDC dE/dx correction: 0.2<p<0.4 GeV

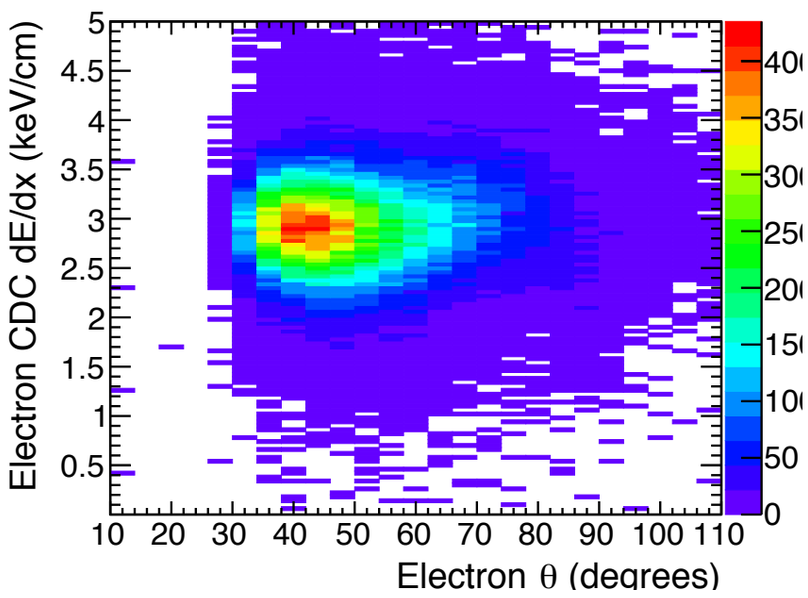
Before Correction

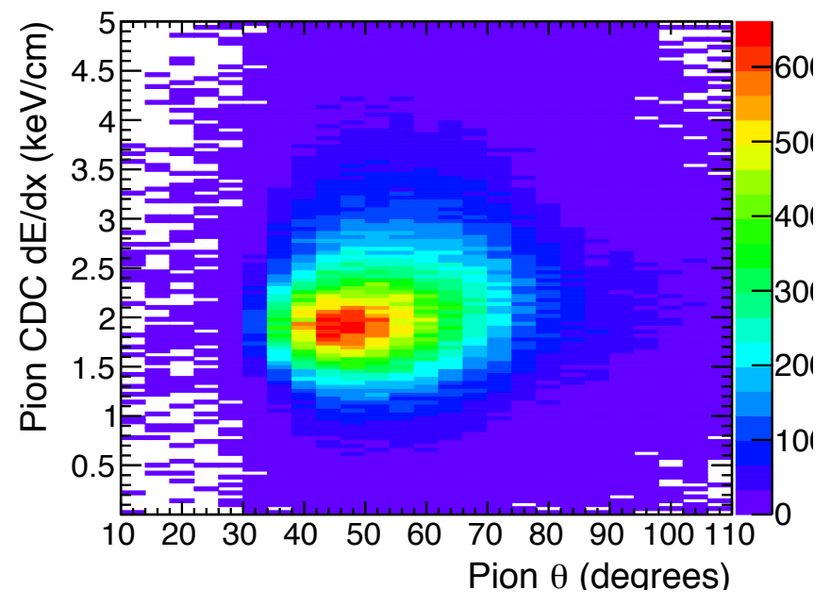


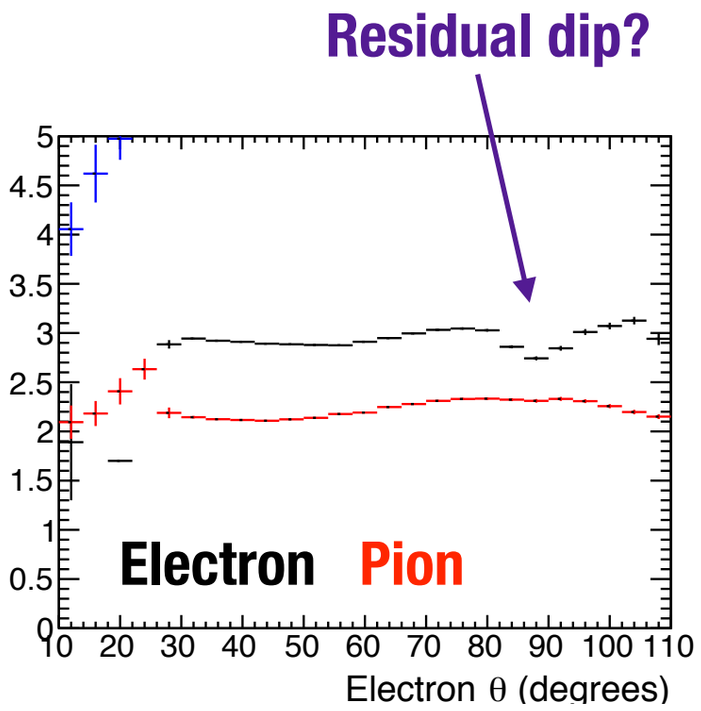




After Correction

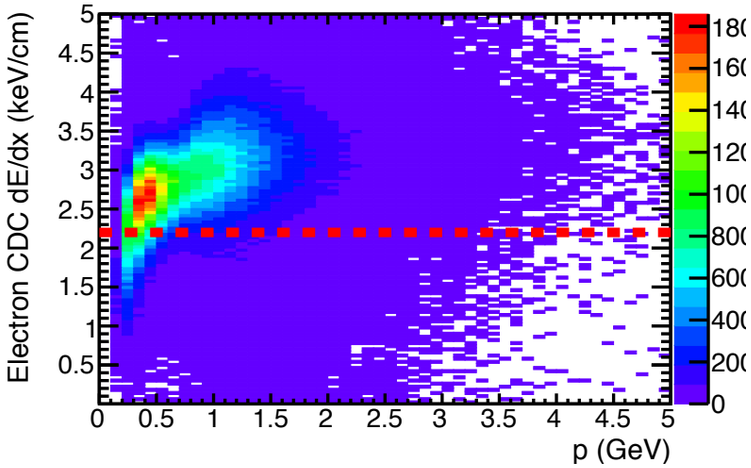


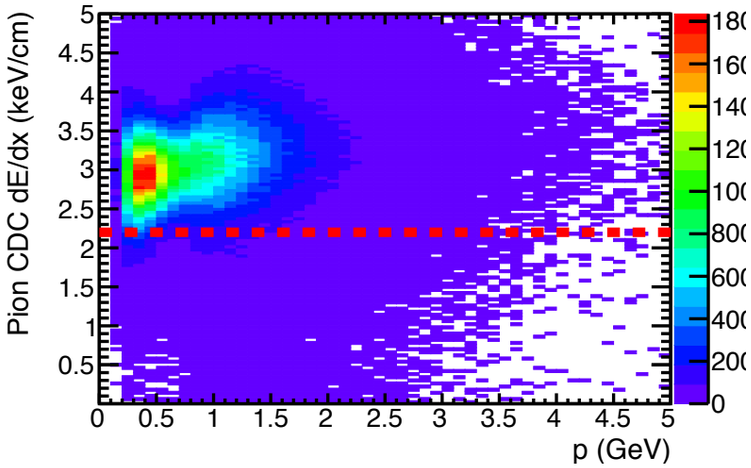


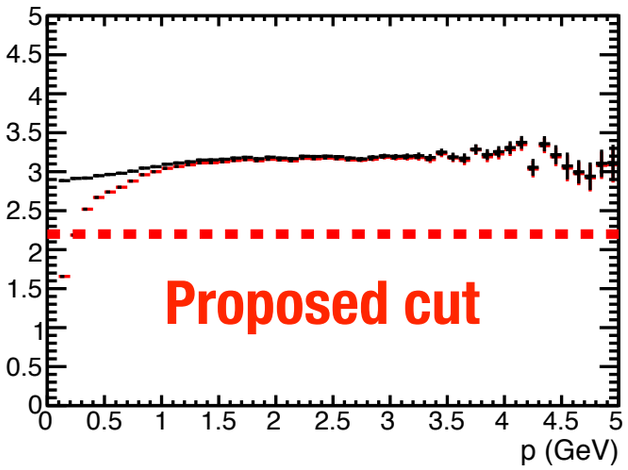


CDC dE/dx vs p

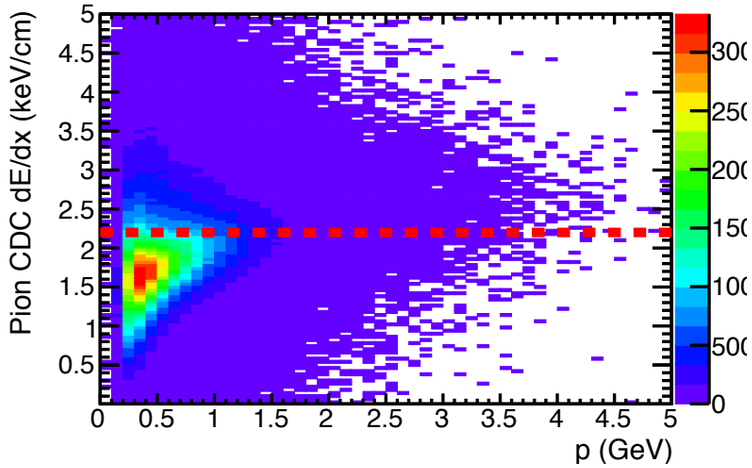
Electrons

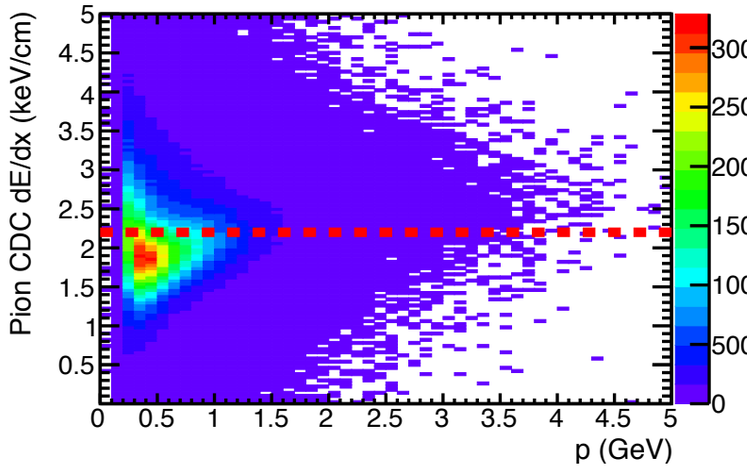


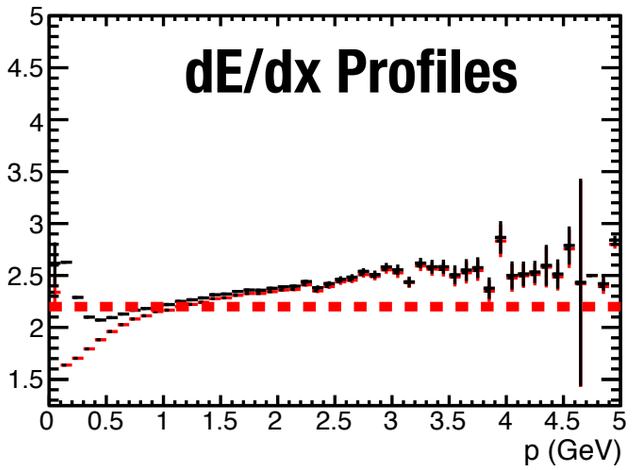




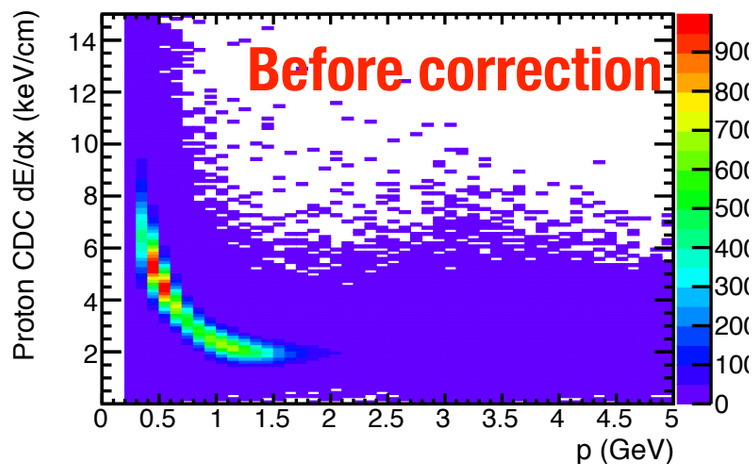
Pions

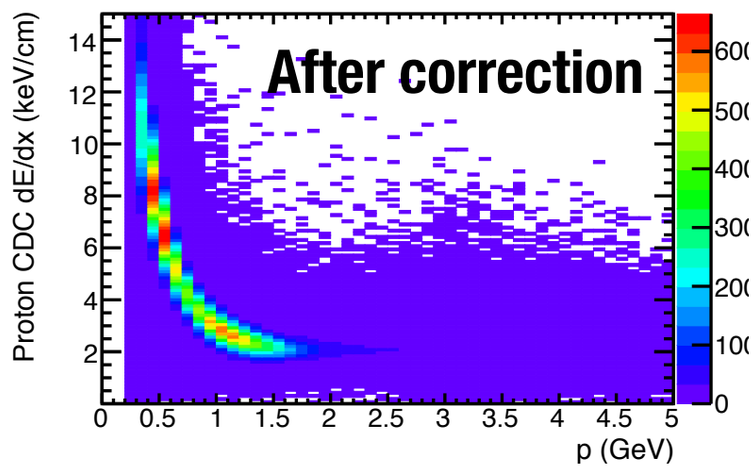


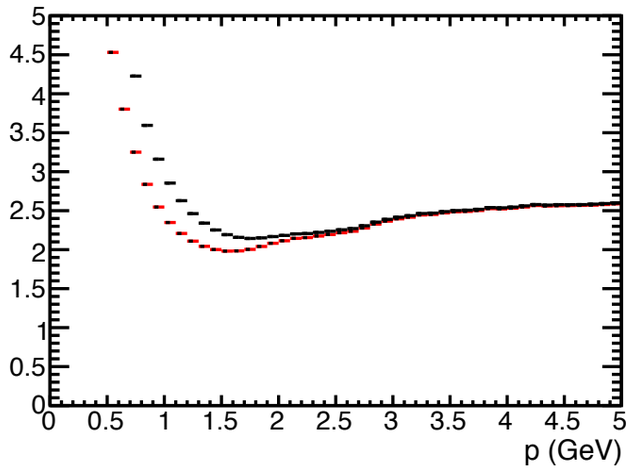




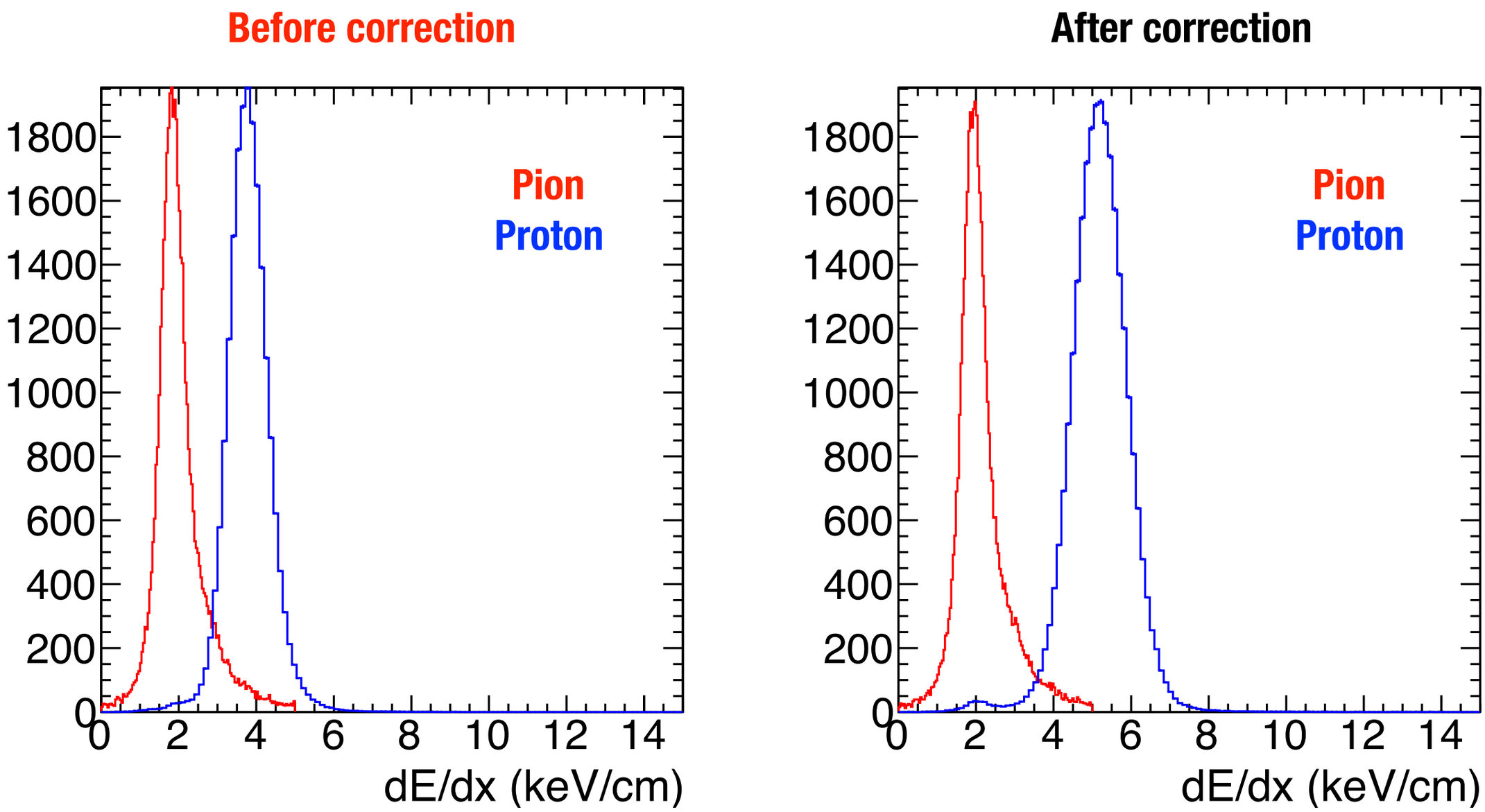
Protons





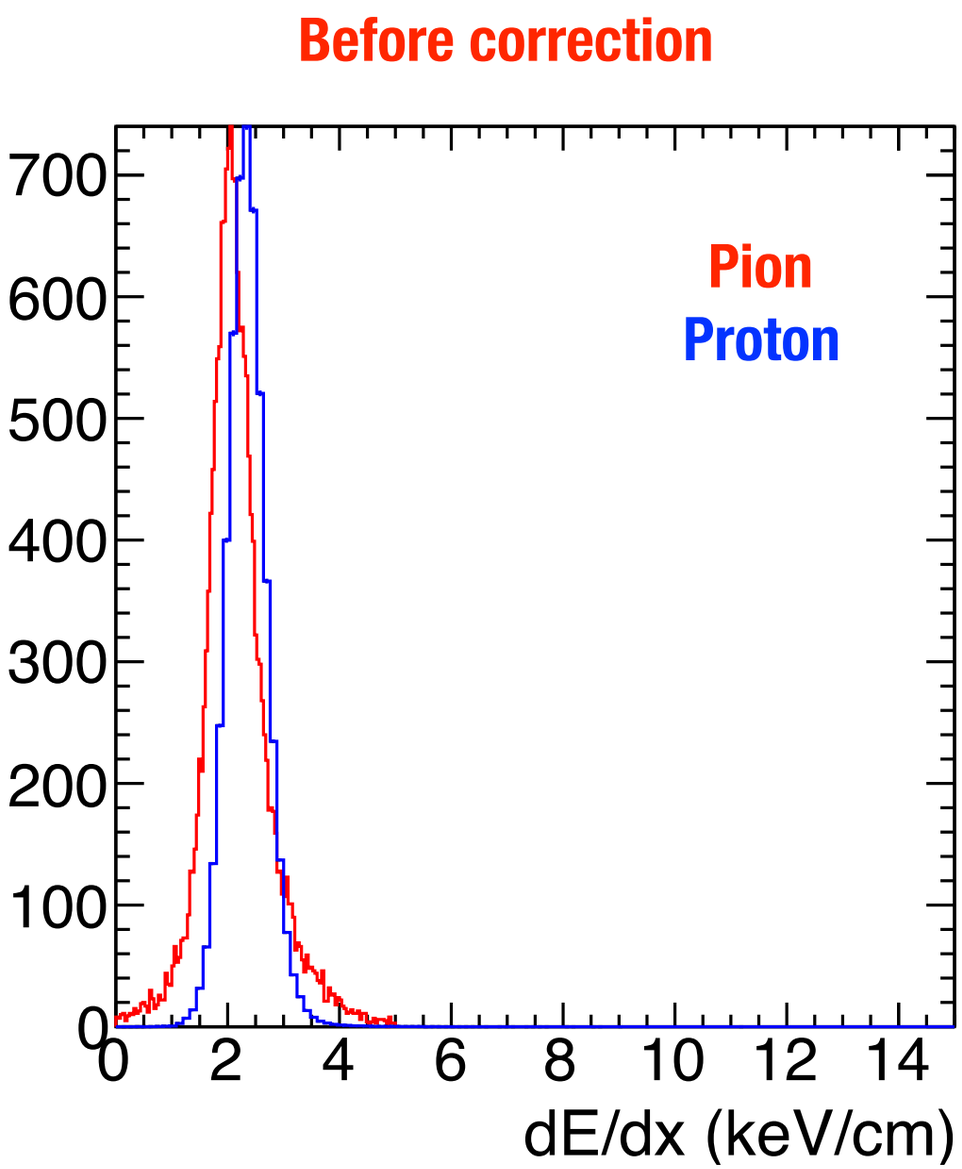


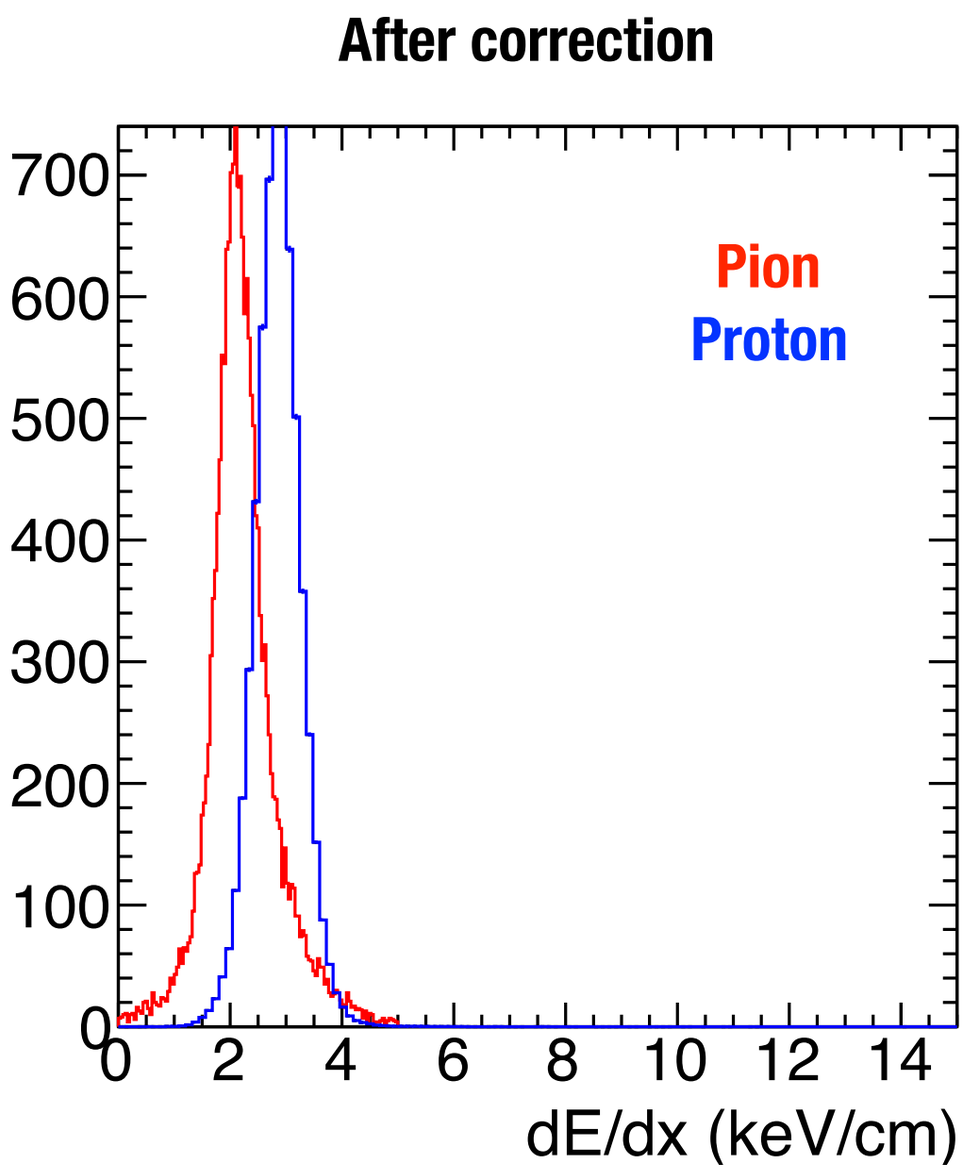
p/π separation: p=0.6 GeV



After θ-dependent correction p/π separation also improves!

p/π separation: p=1.0 GeV





After θ-dependent correction p/π separation also improves!

Summary

- Correction to θ-dependent CDC dE/dx provided by Lubomir
- dE/dx is now ~constant vs θ, so the same cut could be applied in data and MC
  - Likely need some MC tuning to get resolution right
- Improved p/π separation due to better resolution
- ***Where should we implement this correction to the measured dE/dx?***
  - Analysis library (ie. REST) or DSelector (ie. TTrees)