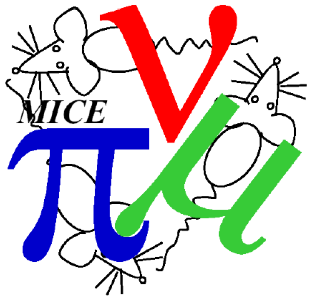

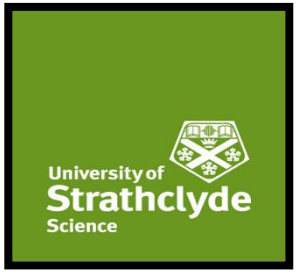

Field On Scattering

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16th May 2018

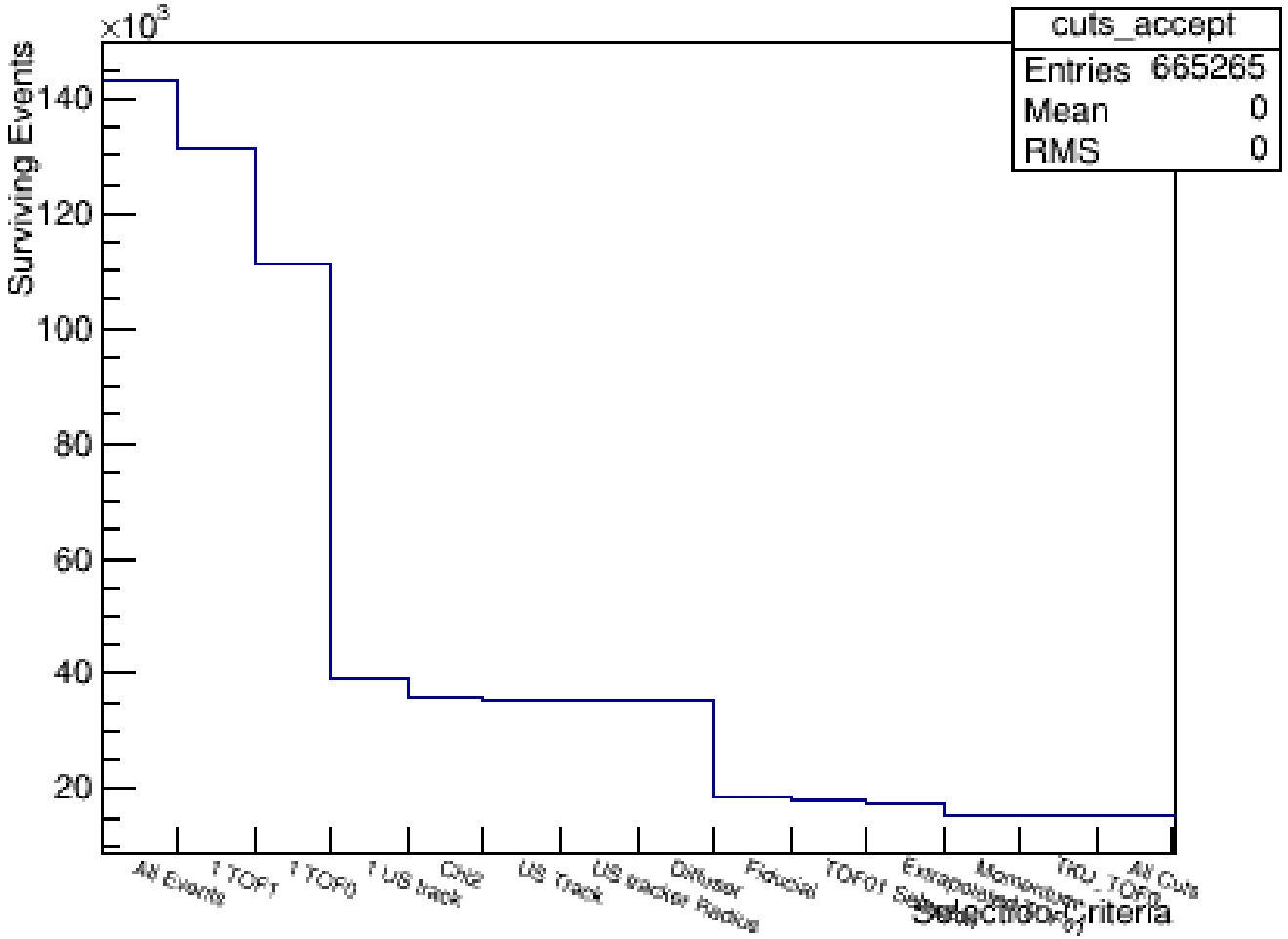
Code Status

- Analysis carried out using Maus 3.1.0
- Field on analysis code based on Field off code developed by R Bayes and J Nuggent.
- Globals implemented in data selection
- Additional cuts added to improve quality of data being analysed
- Access to MICE grid obtained
- Monte Carlo simulations

Data Selection

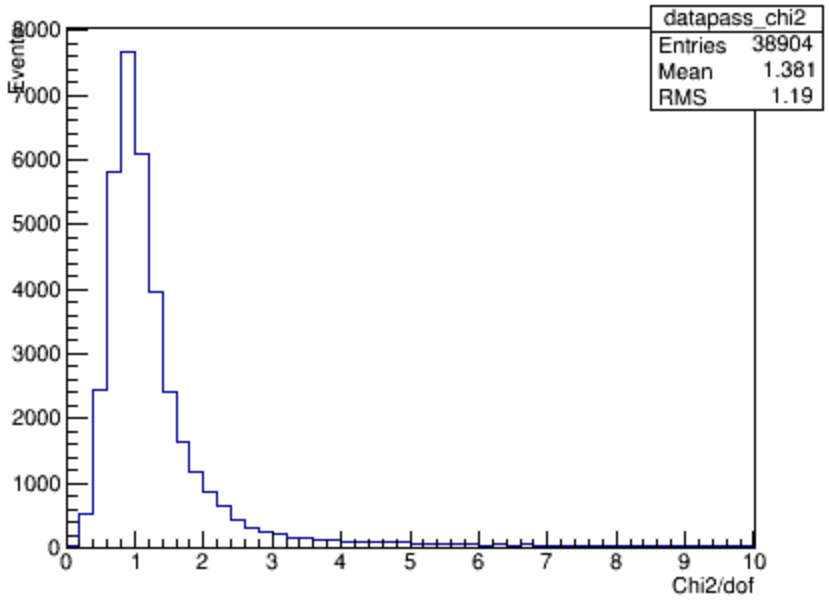
- Require exactly 1 TOF1 space point
- Require exactly 1 TOF0 space point
- Require exactly 1 track in Upstream Tracker
- Upstream tracker Chi2/dof<5
- Upstream tracker max radius < 150mm
- Diffuser max radius < 100mm
- Fiducial Cut – expected radius at station 5 of DS tracker < 150mm
- TOF01 consistent with Muon Peak
- Extrapolated TOF01 consistent with muon hypothesis
- Successfully extrude track from Upstream tracker back to TOF0
- Momentum at absorber in a narrow range

Events surviving each cut

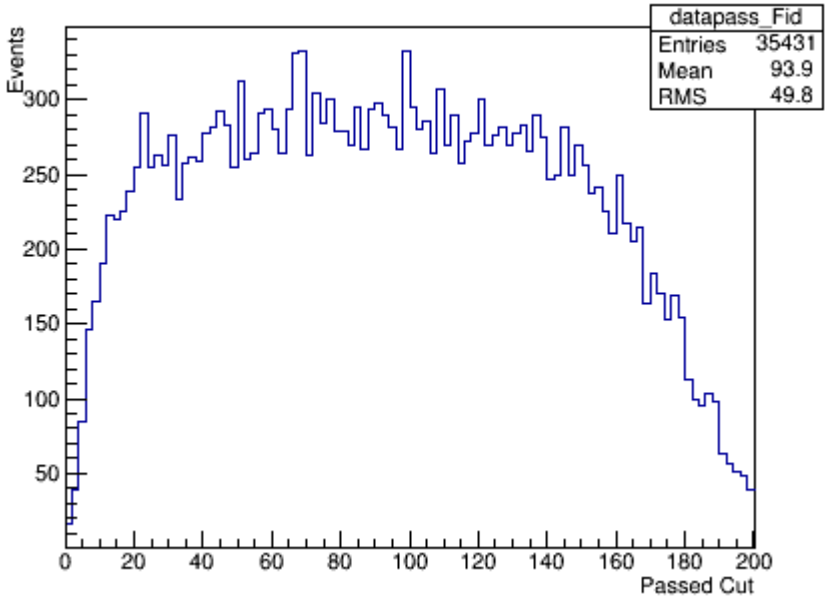


Example of cut selection

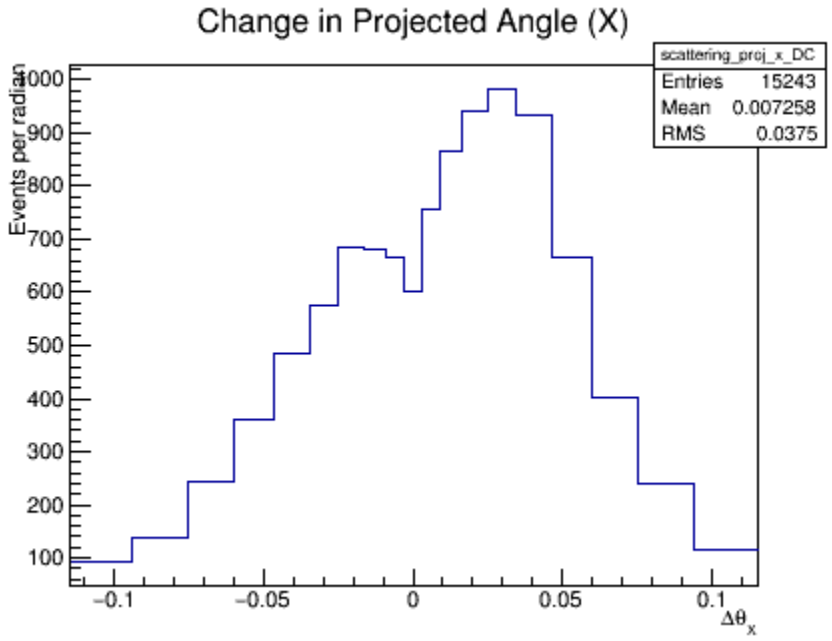
Chi-squared/dof cut

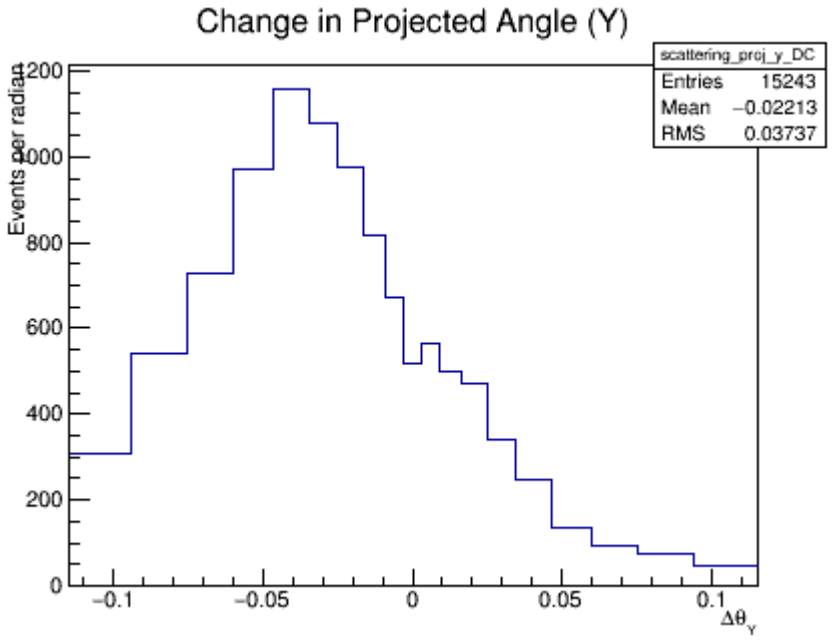


Fiducial Cut

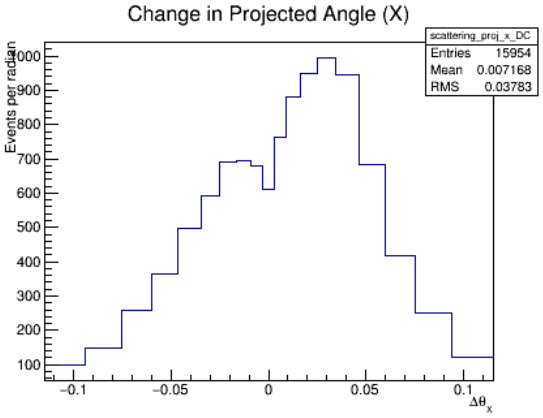


Asymmetry in scattering at absorber

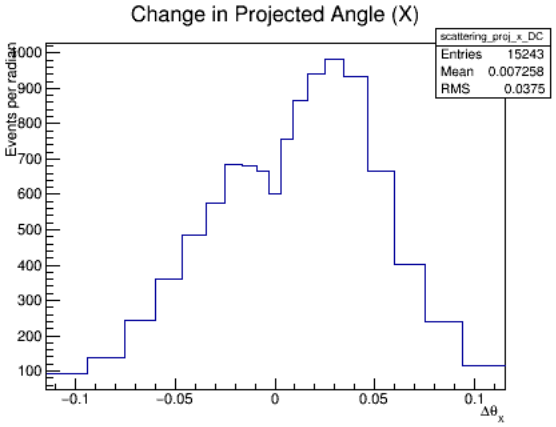




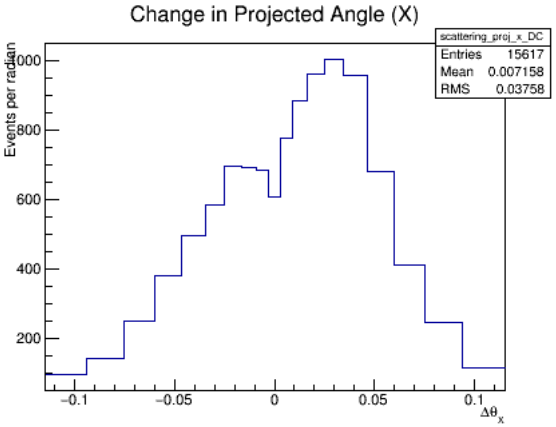
Scattering in X with different cuts



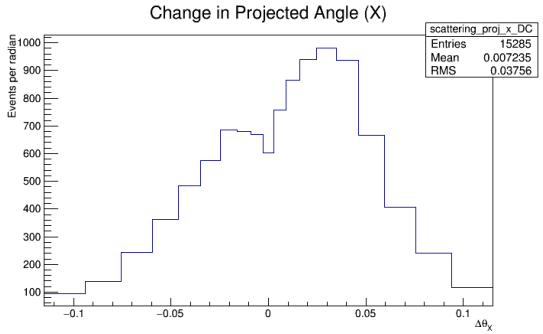
No Chi-squared/dof cut



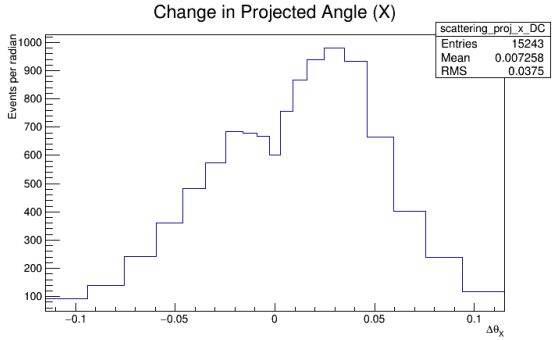
No Diffuser Radius cut



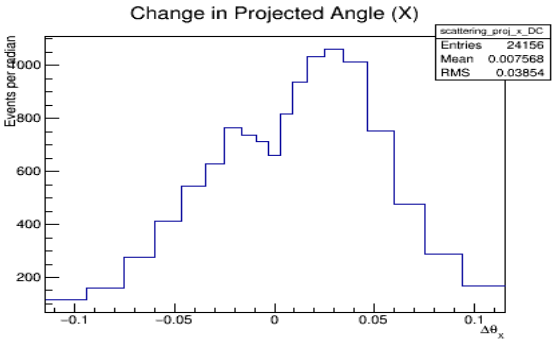
No TOF01 cut



No extrapolated TOF01 cut

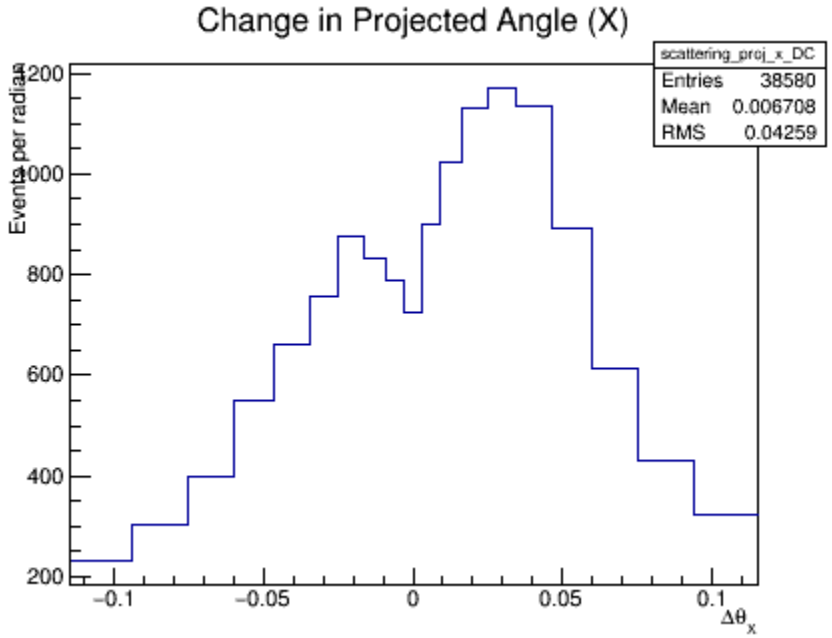


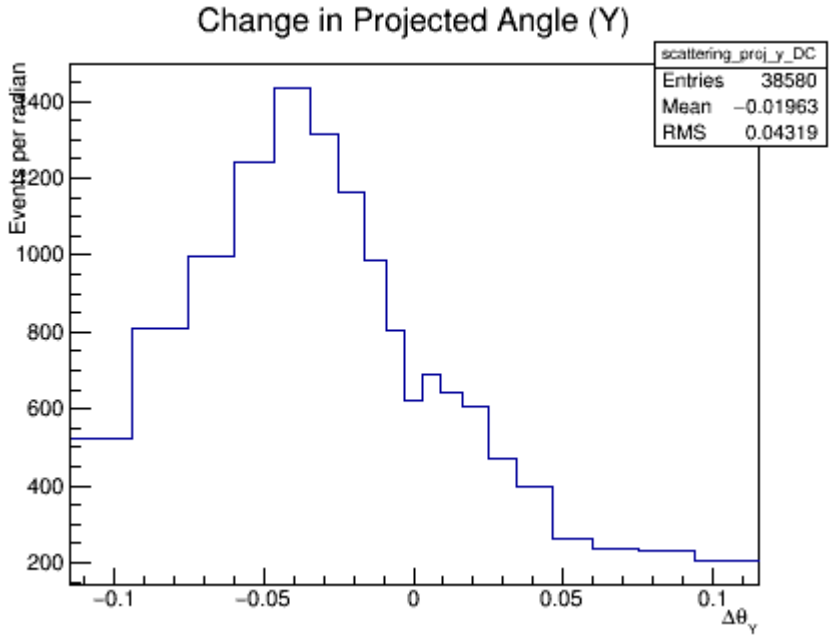
No extrude from TKU to TOF0 cut



No Fiducial cut

Scattering with minimum cuts

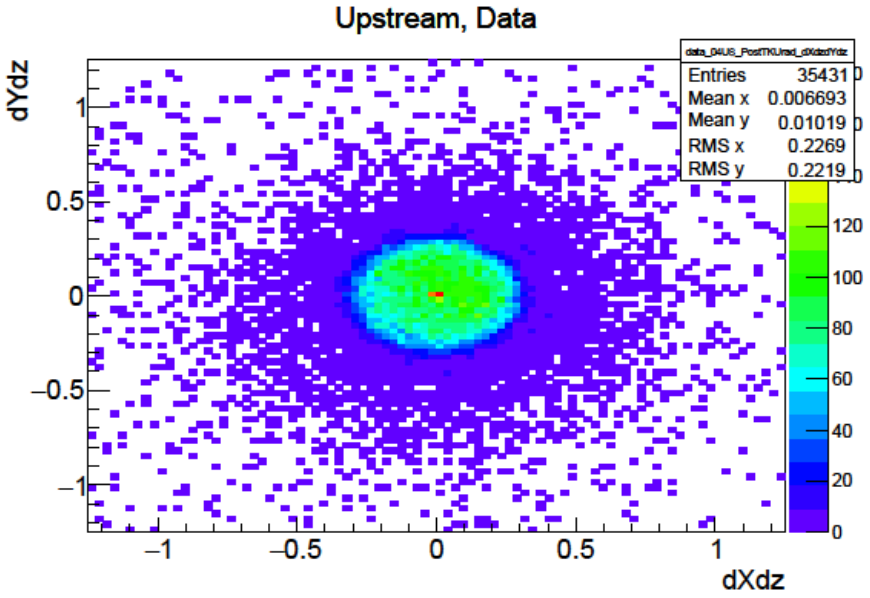


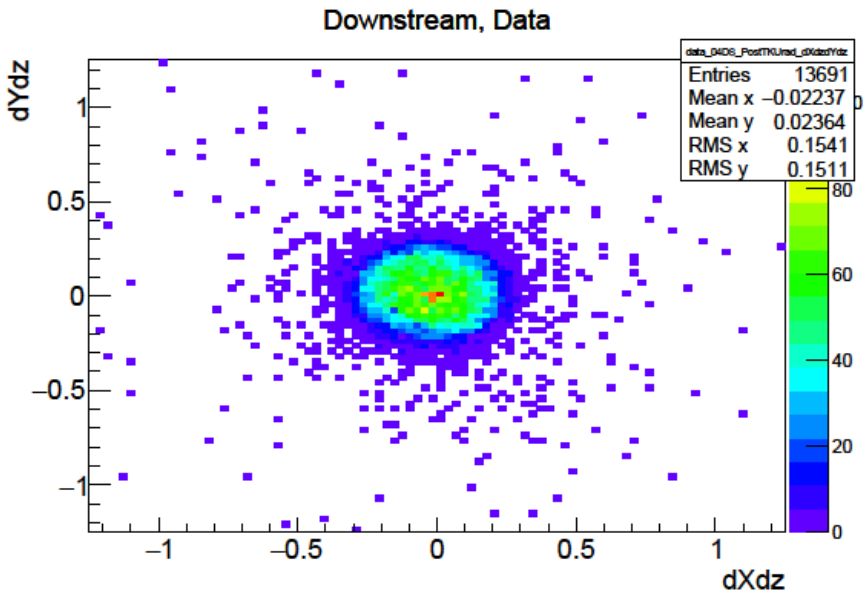


Cuts

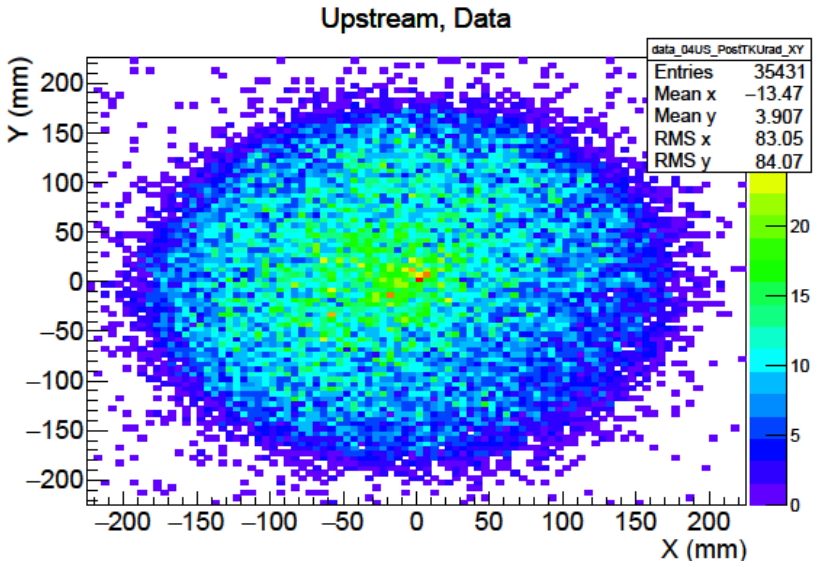
- Require exactly 1 TOF1 space point
- Require exactly 1 TOF0 space point
- Require exactly 1 track in Upstream Tracker

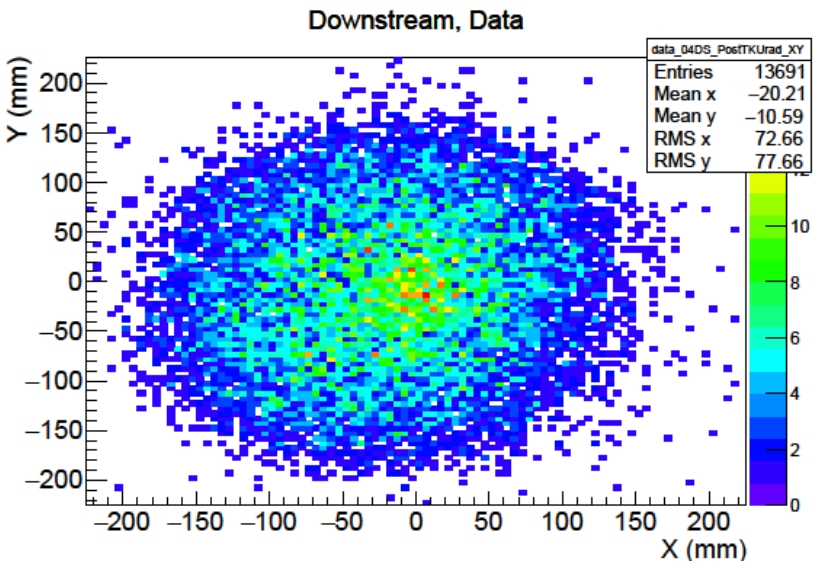
Angular 2D Histograms at centre of absorber





XY 2D Histograms at centre of absorber





Future Work

- Investigate asymmetry in scattering
  - Look at data from trackers
  - Look at Monte Carlo data
- Test access to MICE grid and prepare data for analysis on MICE grid
- Prepare scripts for error analysis