

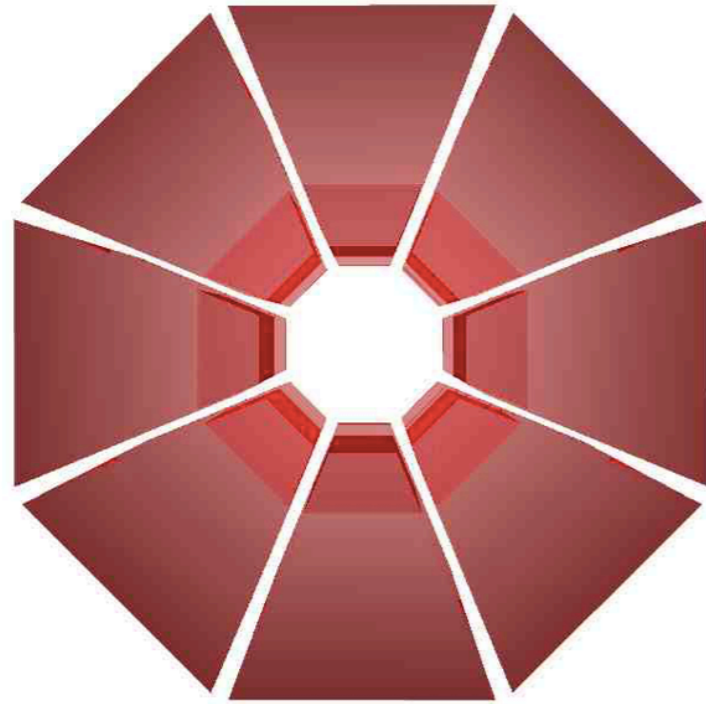
Track momentum resolution with new geometry of SPD

SPD MC & Physics meeting 17.06.20
Gridin Andrei (JINR)

Geometry of SPD barrel

- **Old geometry:**

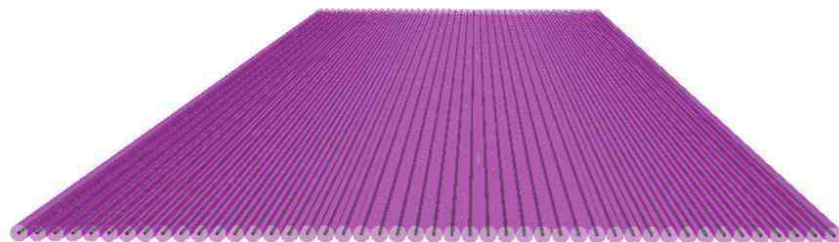
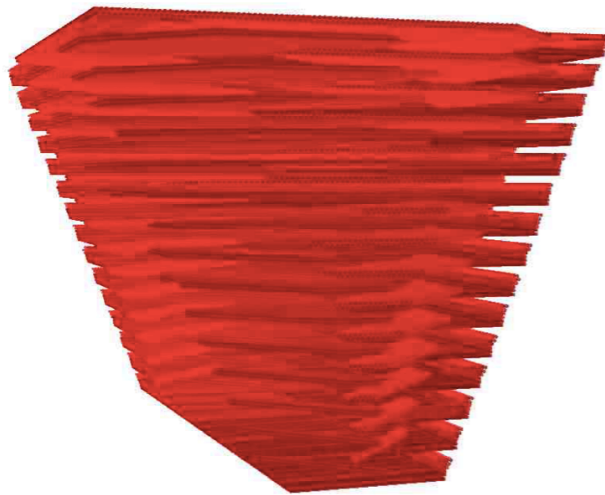
Typical size of barrel: 3200 mm;
Number of tube slices: 95;
Solenoidal magnetic field (0.4T on axis)
(map_sol_6cls5cm2.bin);



- **New geometry:**

Typical size of barrel: 1708 mm;
Number of tube slices: 45;
Several magnetic fields were studied:

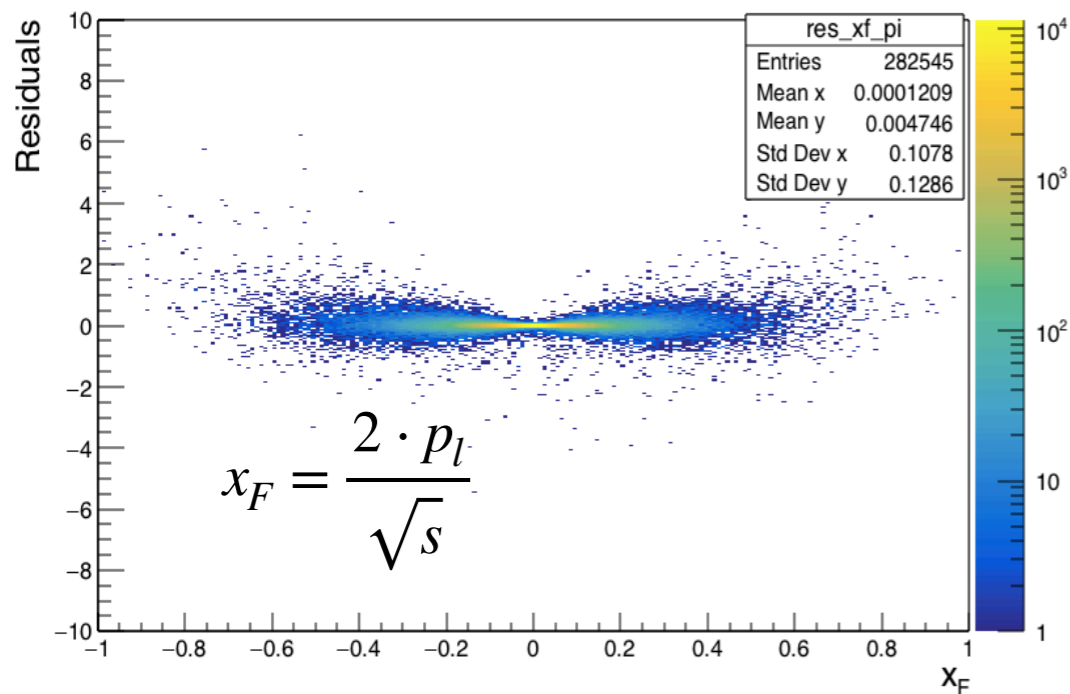
- Solenoidal field (0.4T on axis)
(map_sol_6cls5cm2.bin);
- Constant 0.5T;
- Constant 0.8T (default);
- Constant 1.5T;
- Constant 2T;



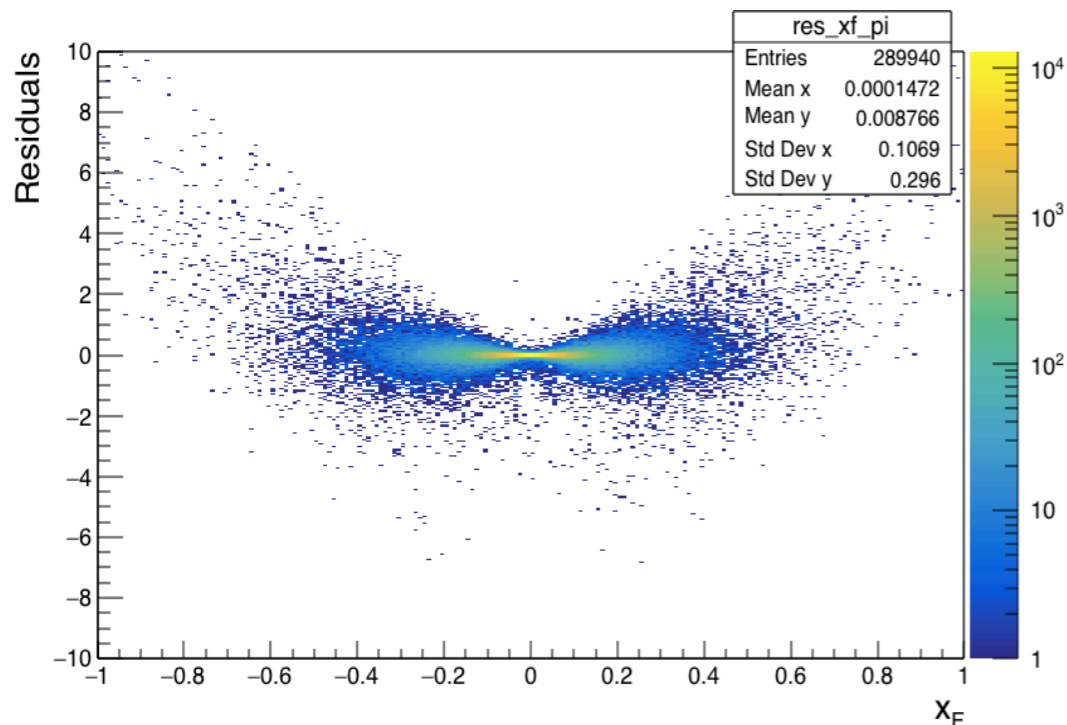
Momentum resolution (pions)

Momentum resolution is the difference between generated and reconstructed track momentum.

Old geometry (solenoidal field)



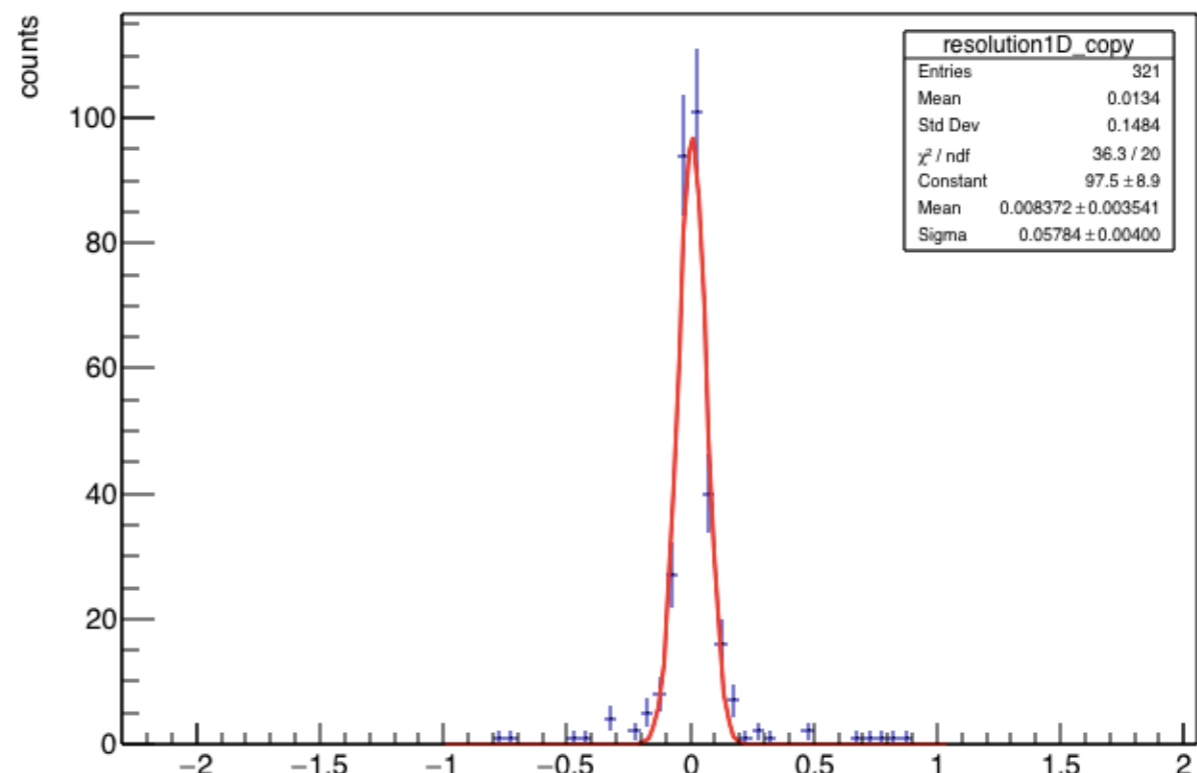
New geometry (solenoidal field)



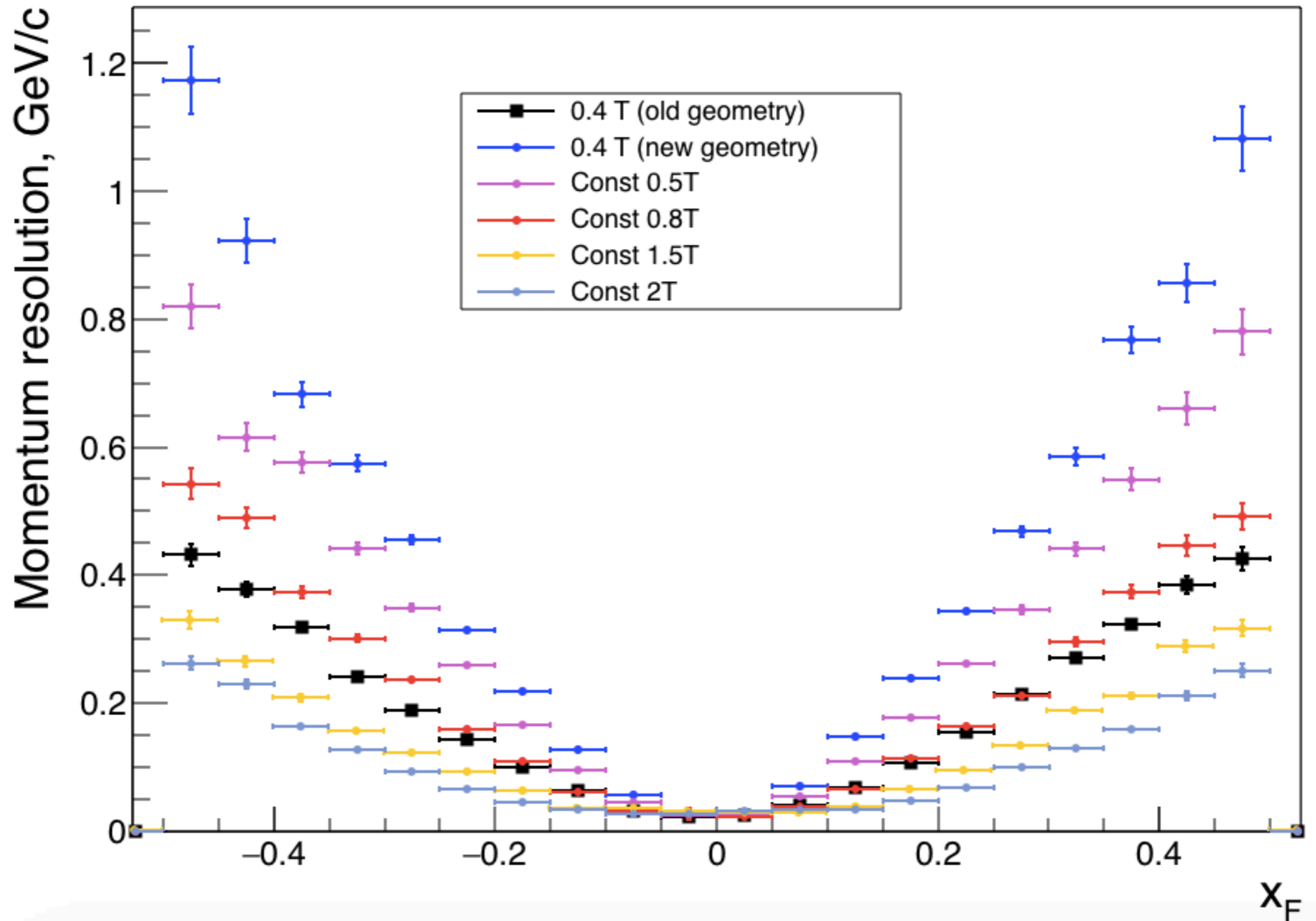
For reconstructed tracks «IsGood» selection was applied;

All the plots are shown for pions;
2D plots were projected to Y axis.

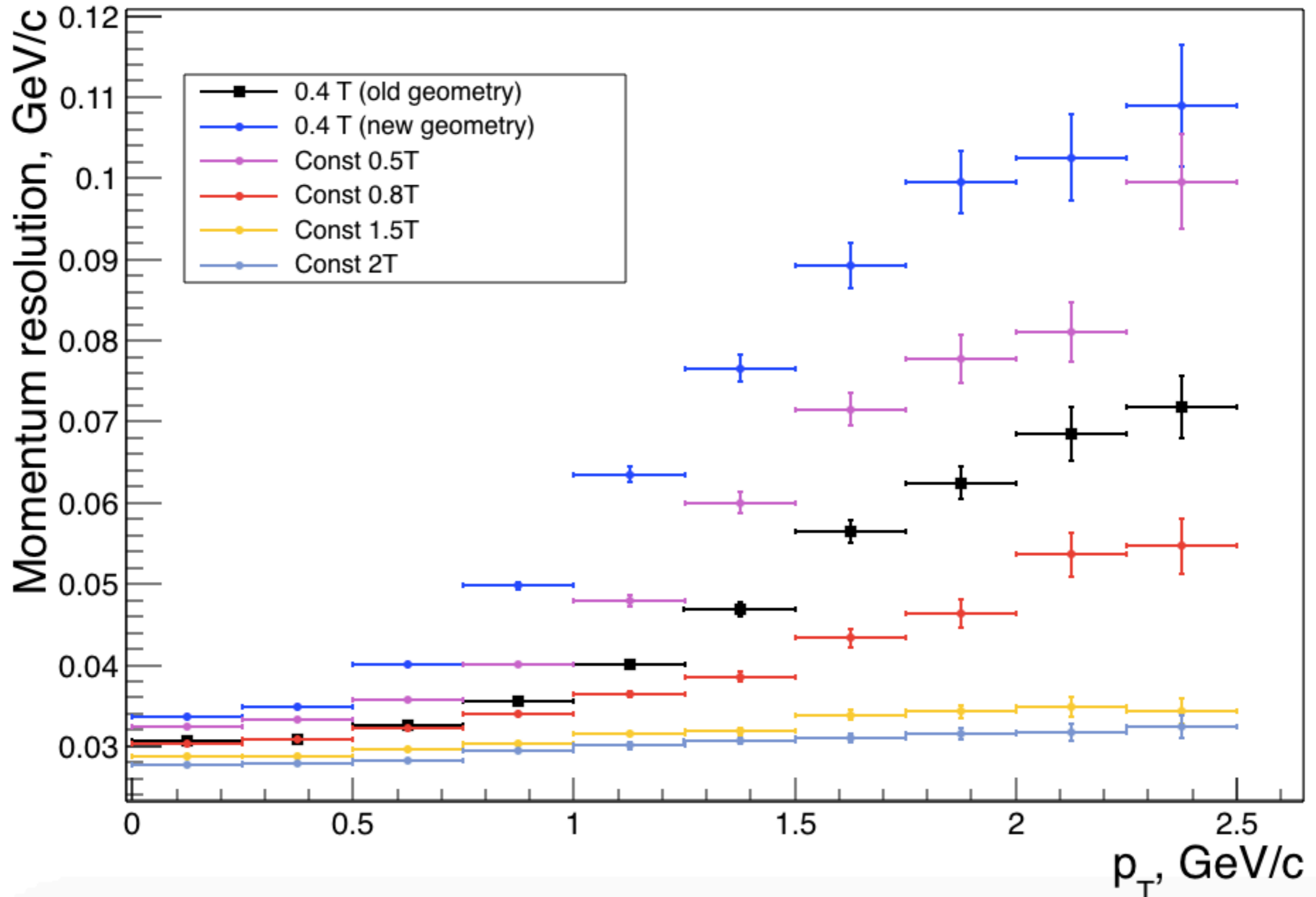
For each region of x_F resolution was estimated from the fit:



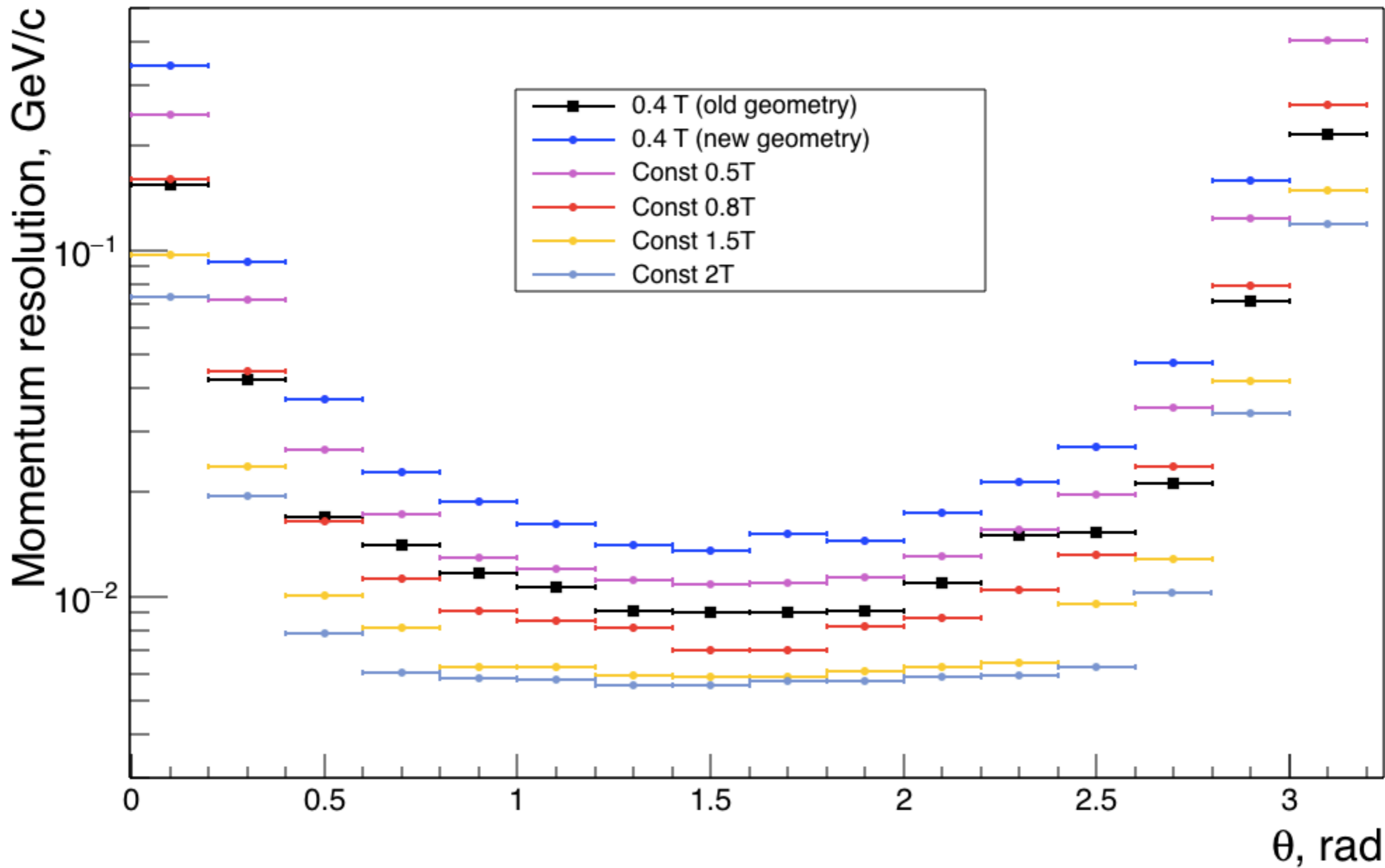
Pion momentum resolution vs x_F



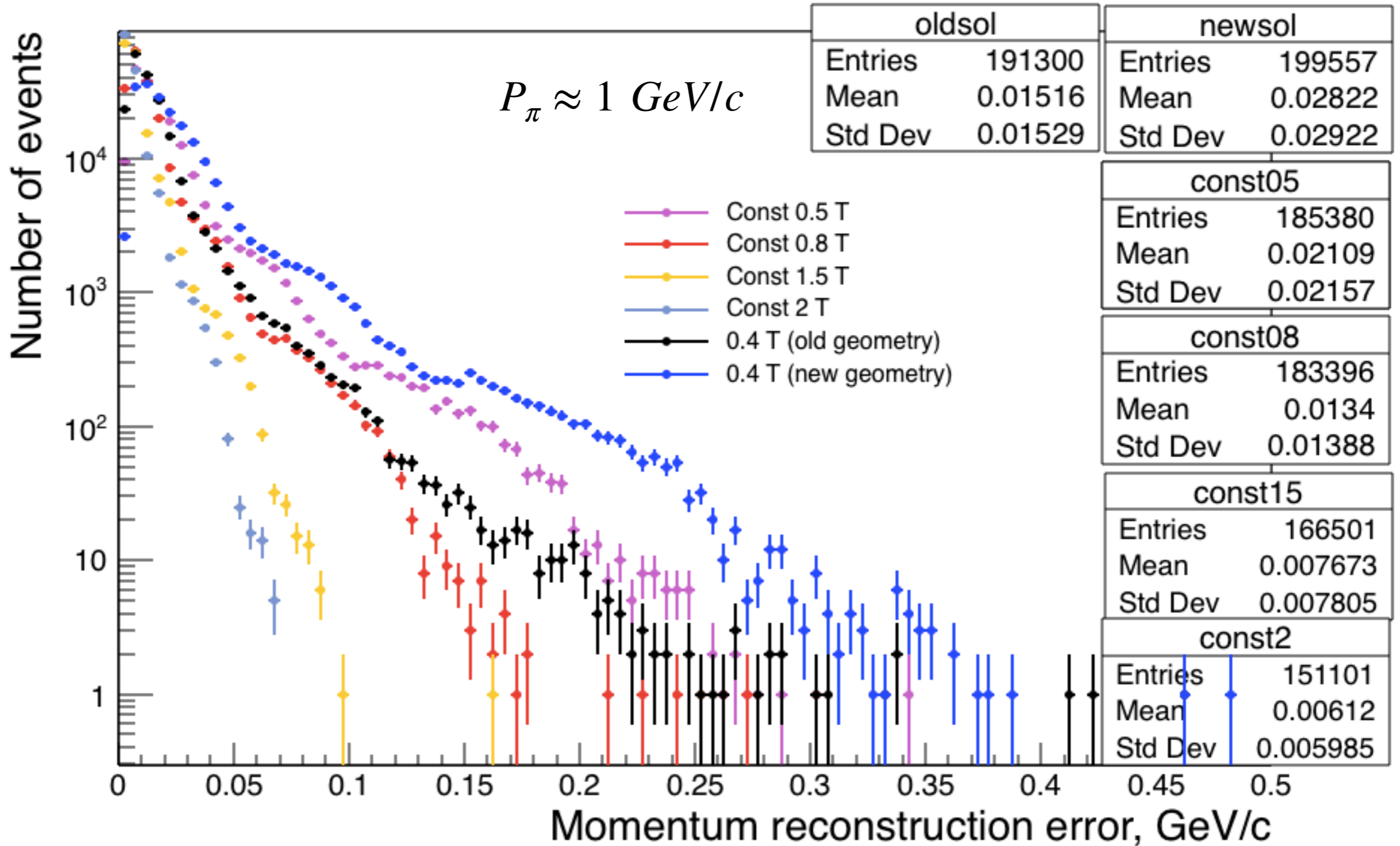
Pion momentum resolution vs p_T



Pion momentum resolution vs θ

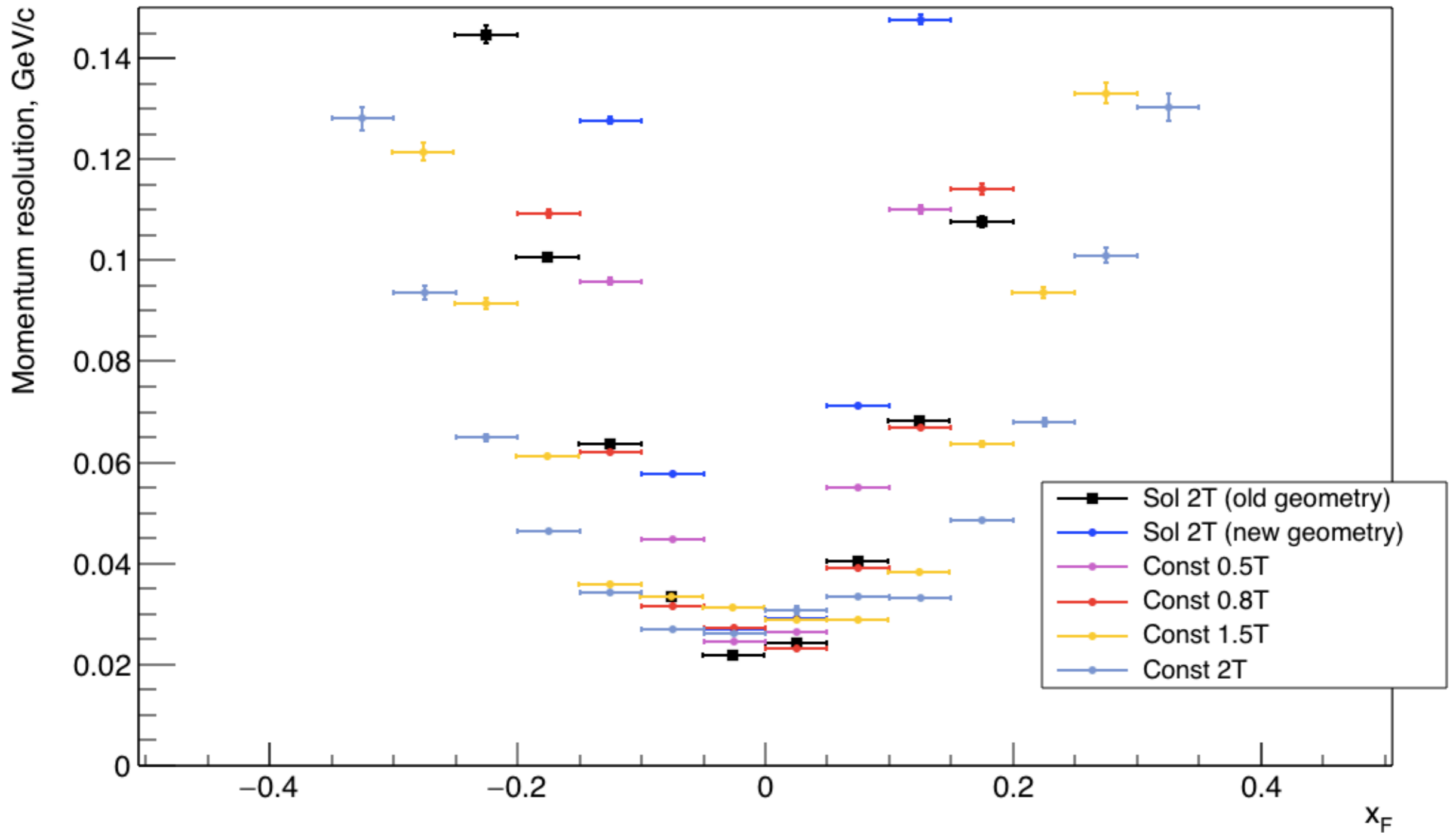


Track reconstruction error



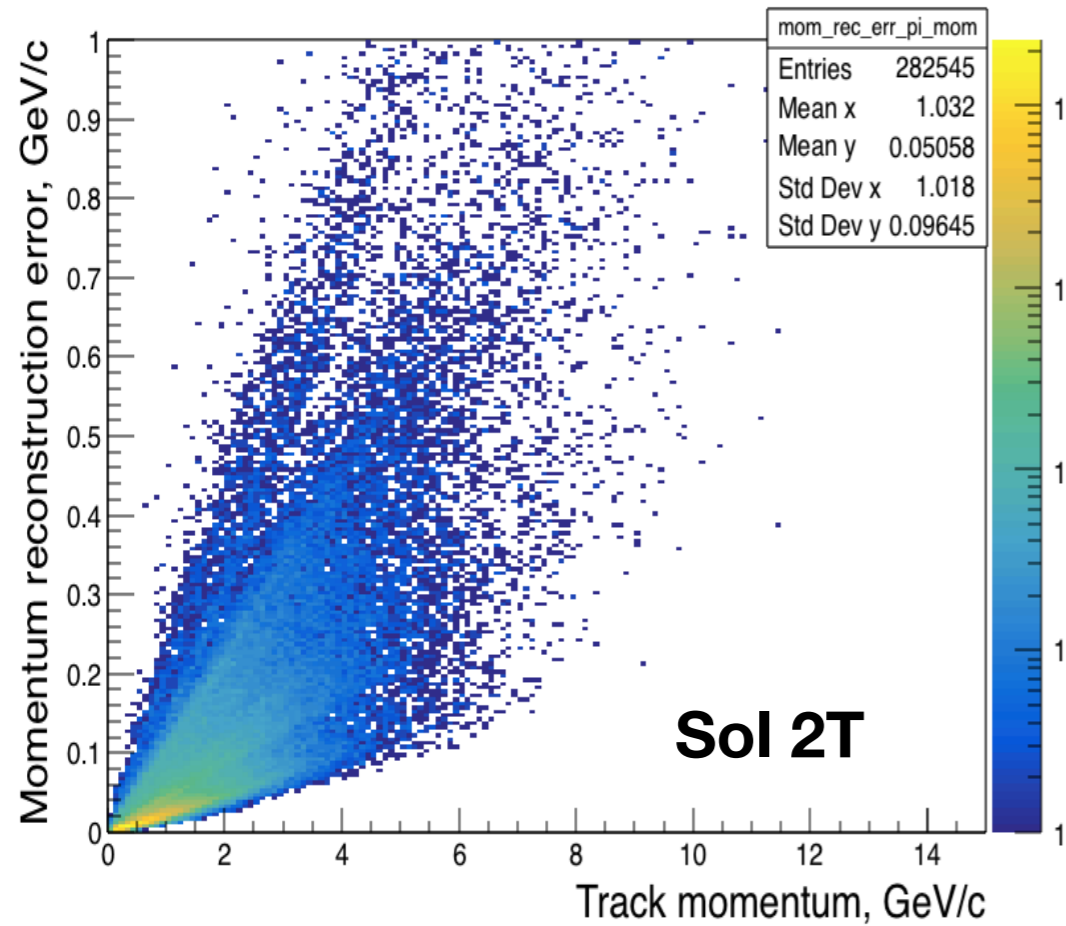
BACKUP

Pion momentum resolution vs x_F



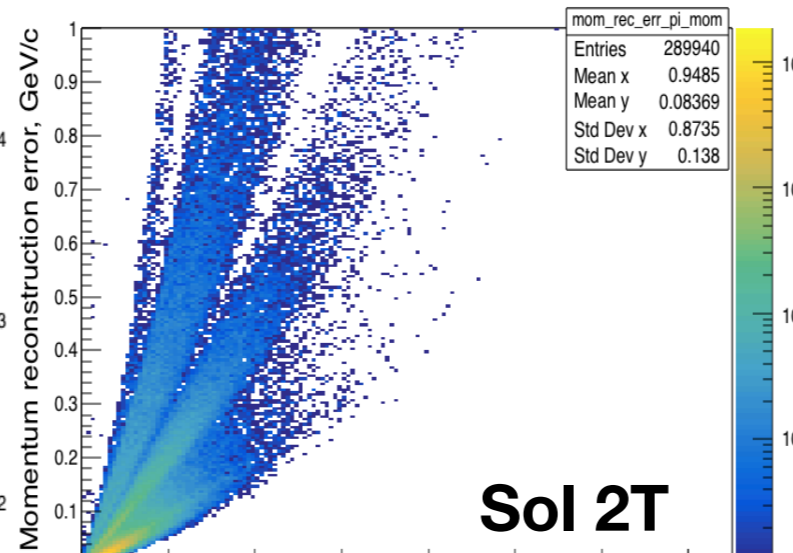
Track reconstruction error

Old geometry

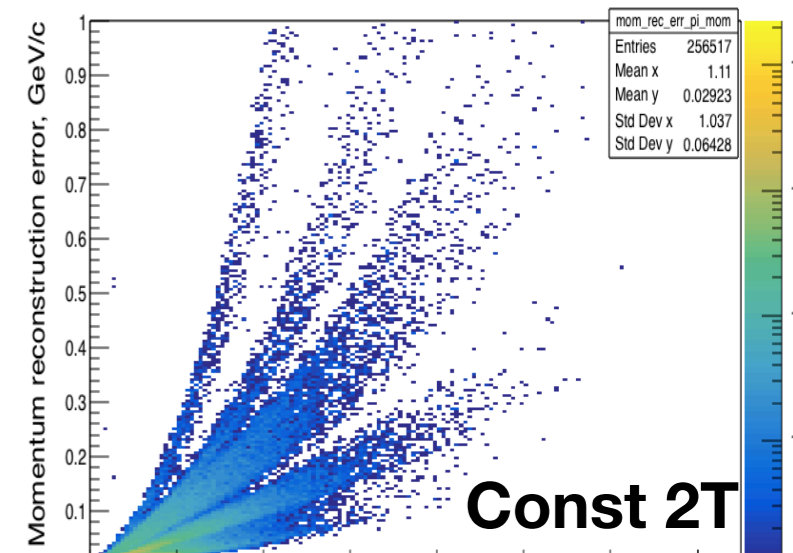


Sol 2T

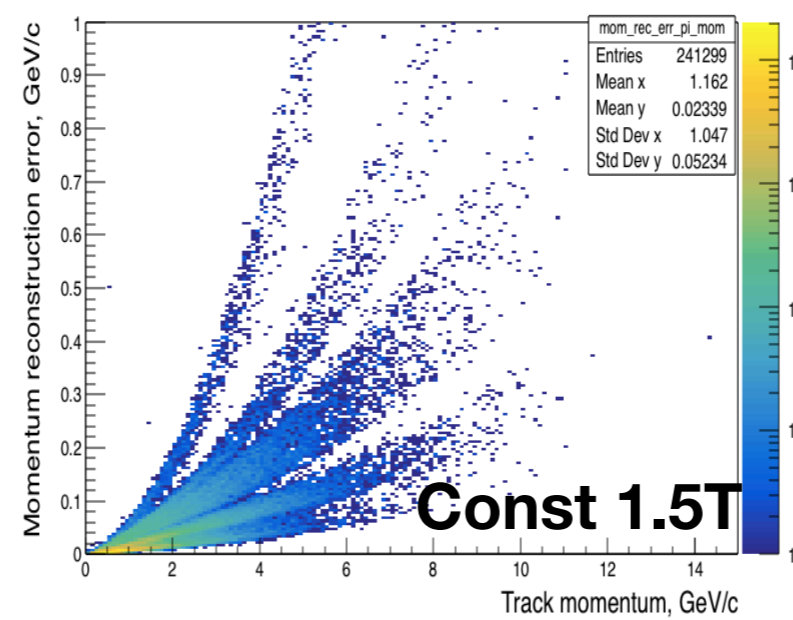
New geometry



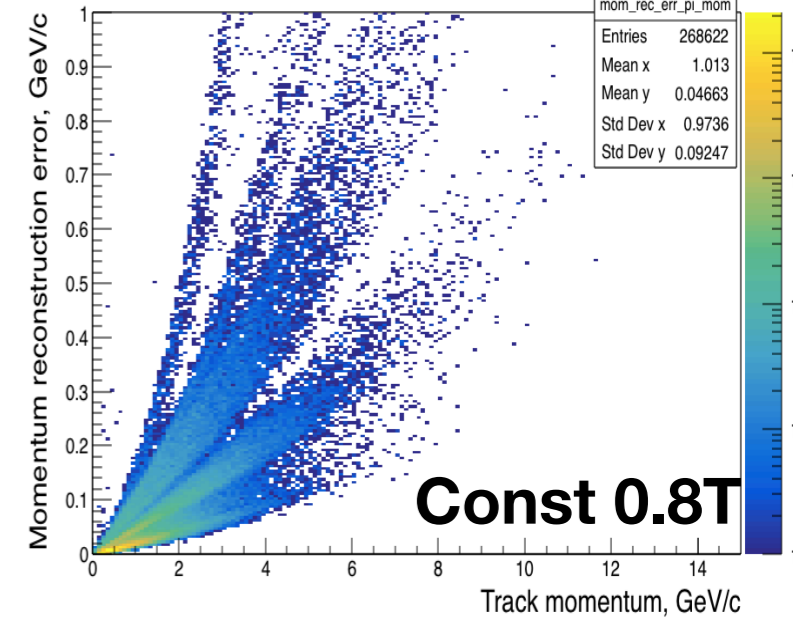
Sol 2T



Const 2T



Const 1.5T



Const 0.8T