



# Global Track Fit/Tracker alignment

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# Tracker alignment

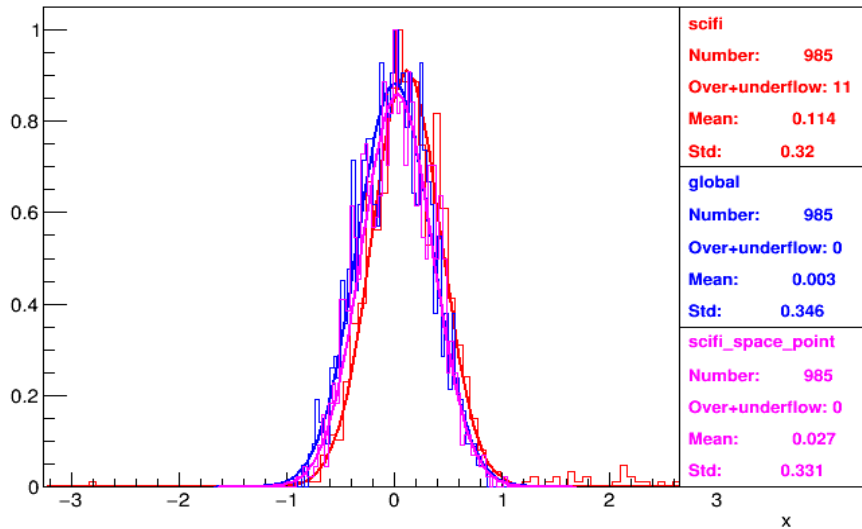


- Last time looked at Rogers “ideal beam” MC through tracker
- Residuals of track fit compared to MC
- Since then full MC and recon for MAUS 2.5.0 are available

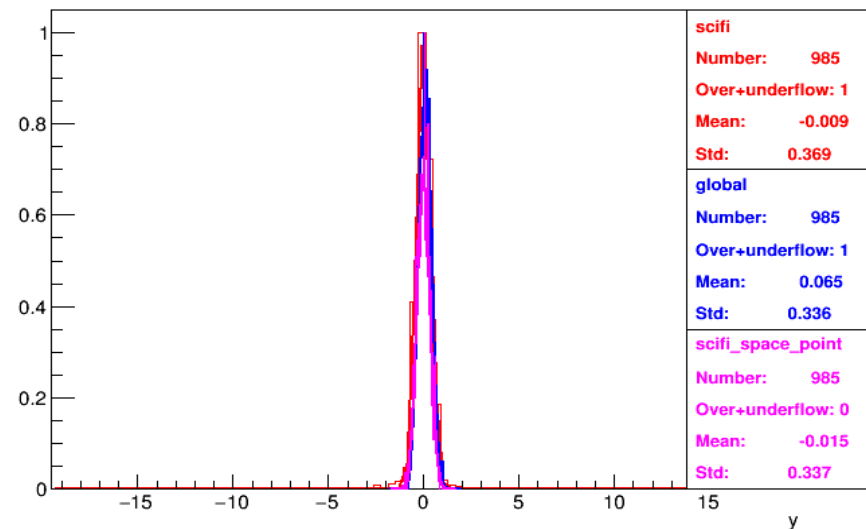
# OPERA field map (no tilt)



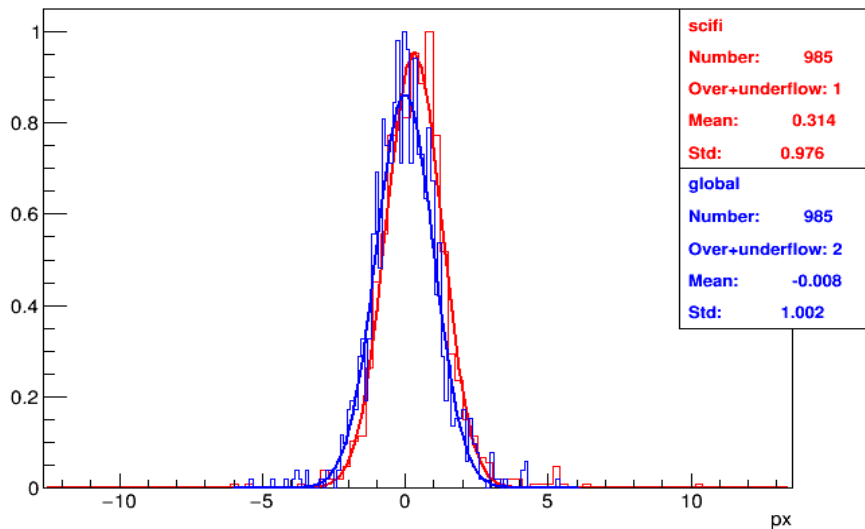
z = 15062.0 mm



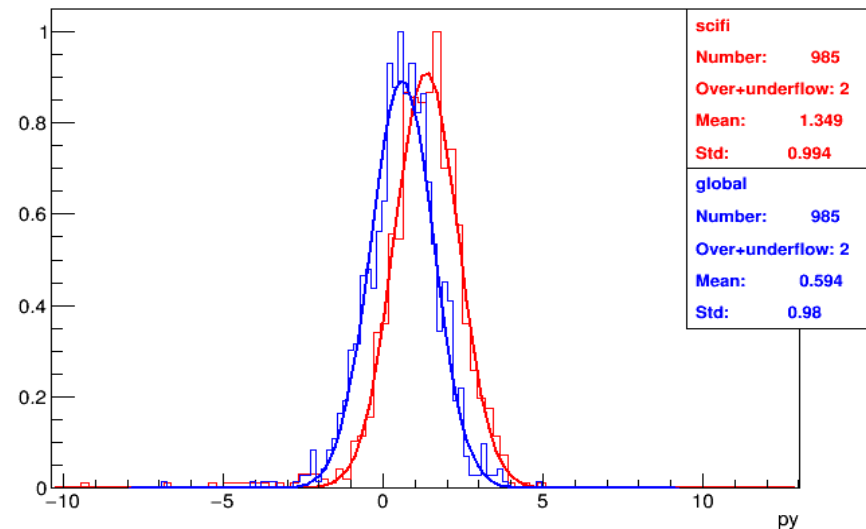
z = 15062.0 mm



z = 15062.0 mm



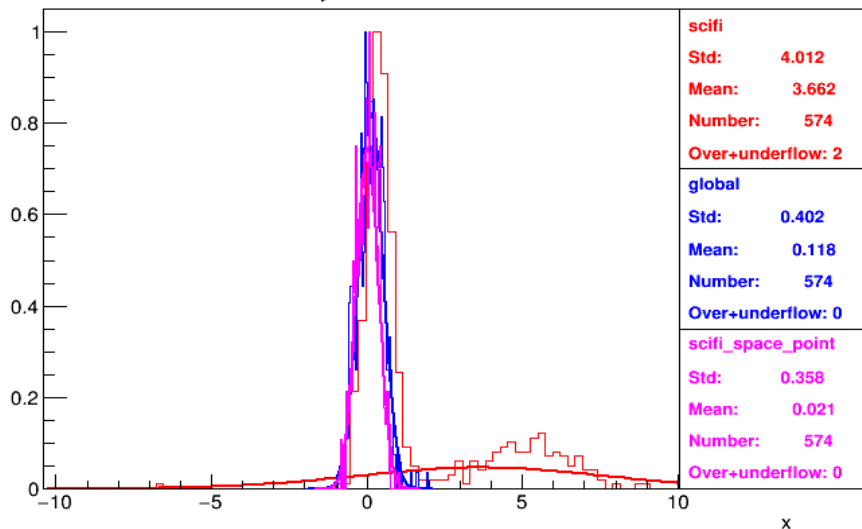
z = 15062.0 mm



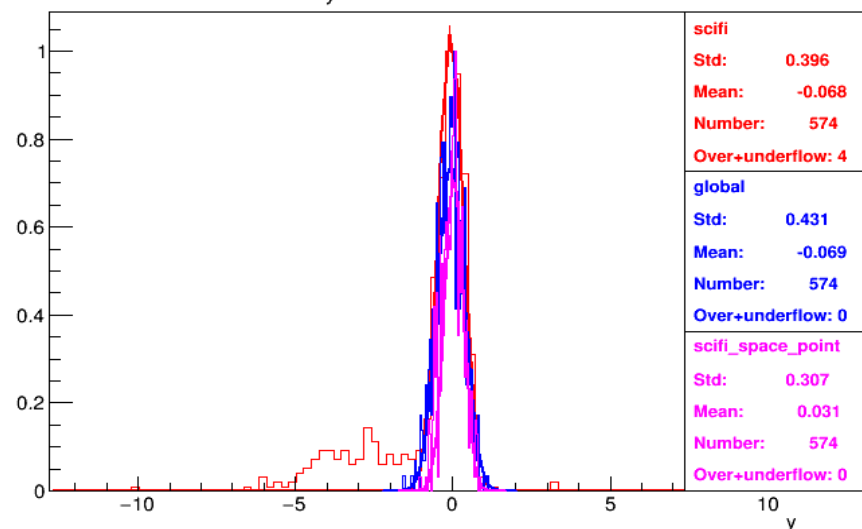
# OPERA field map 0.5° Tilt



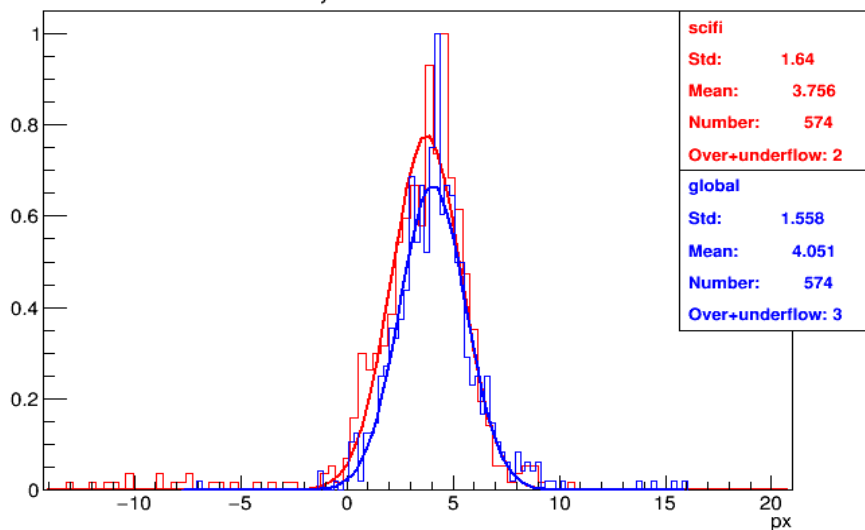
$\theta_x = 0.5^\circ \theta_y = 0.0^\circ z = 15062.0 \text{ mm}$



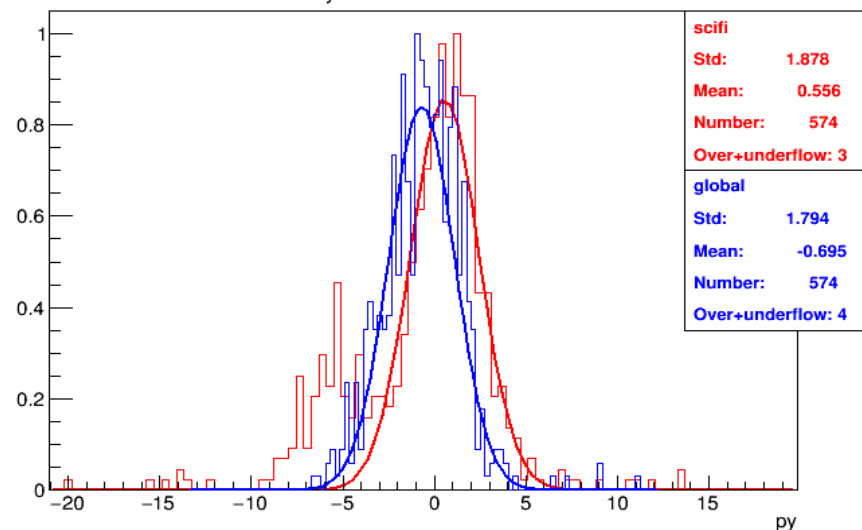
$\theta_x = 0.5^\circ \theta_y = 0.0^\circ z = 15062.0 \text{ mm}$



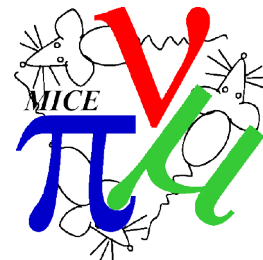
$\theta_x = 0.5^\circ \theta_y = 0.0^\circ z = 15062.0 \text{ mm}$



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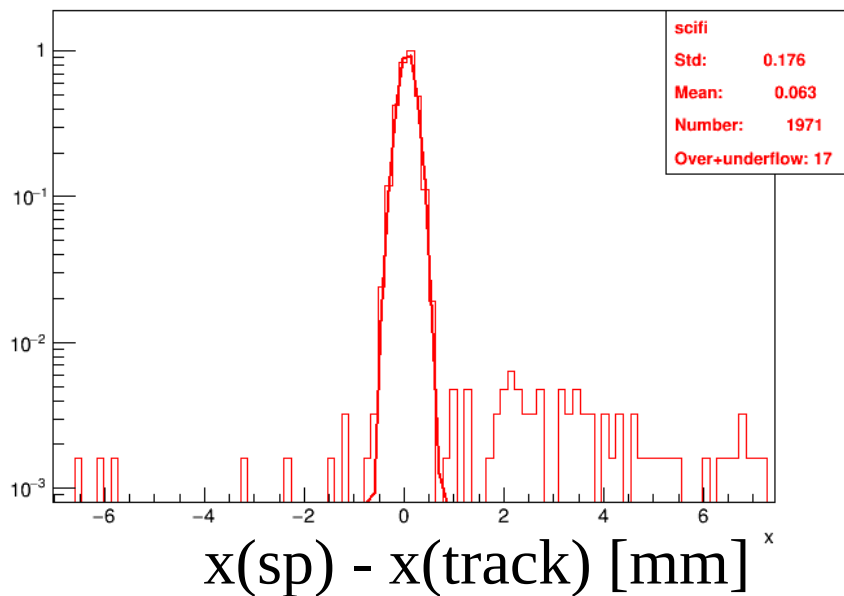


# Full MC

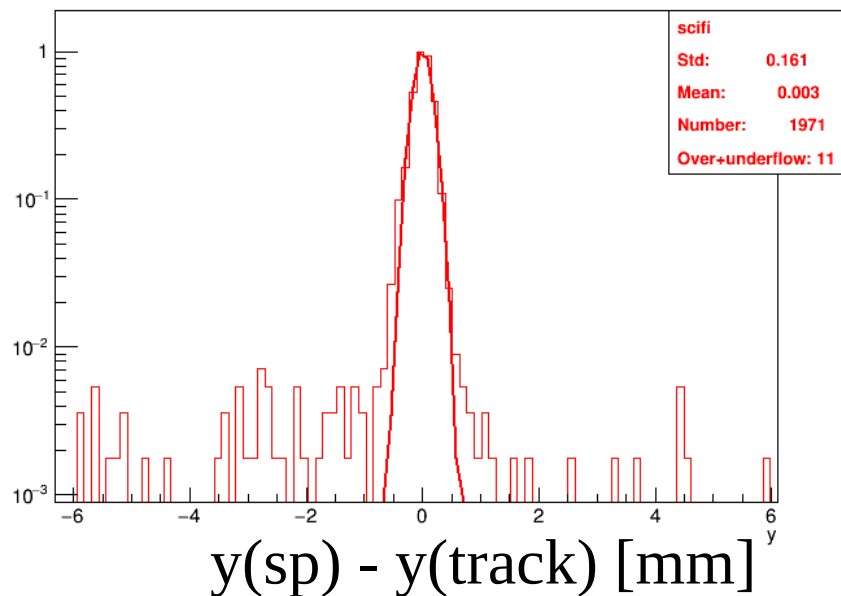


- Full MC - no cuts applied
- Note I now use log plots (seek a signal at  $\sim 10^{-1}$ )
- Compare space points with fitted tracks

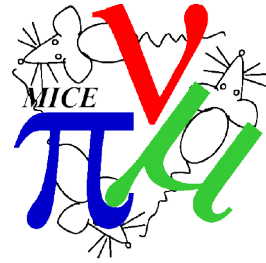
mc\_3mm200\_07469\_M AUS-v250\_1.rootz = 15062.0 mm



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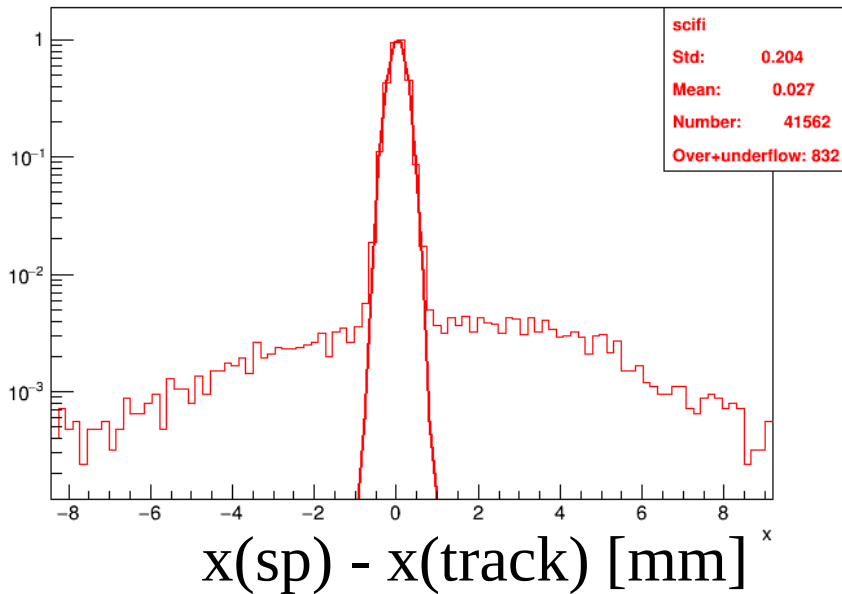


# Full Recon - no cuts

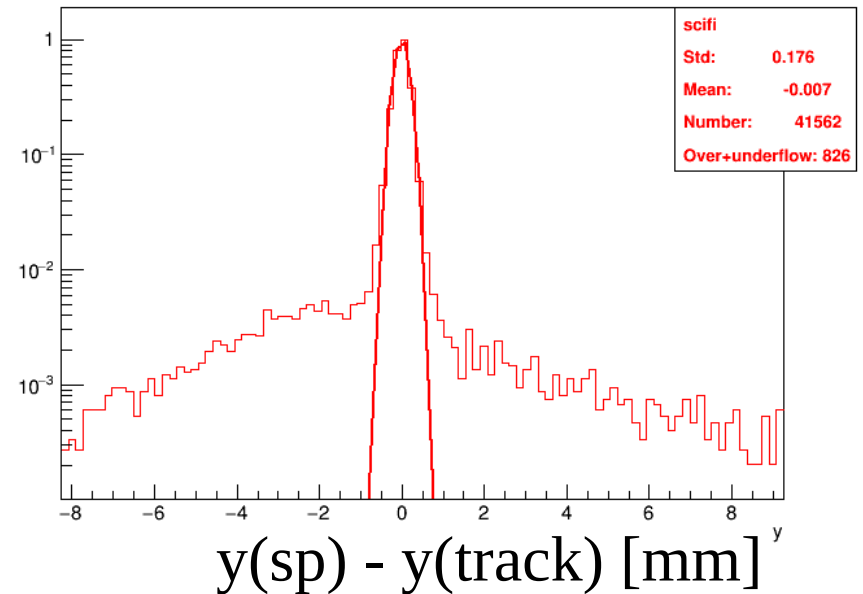


- Full Recon - no cuts
- Compare space points with fitted tracks

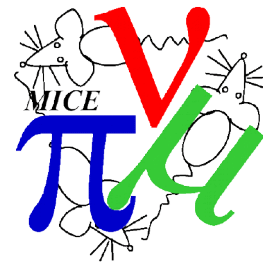
07469\_recon.rootz = 15062.0 mm



07469\_recon.rootz = 15062.0 mm

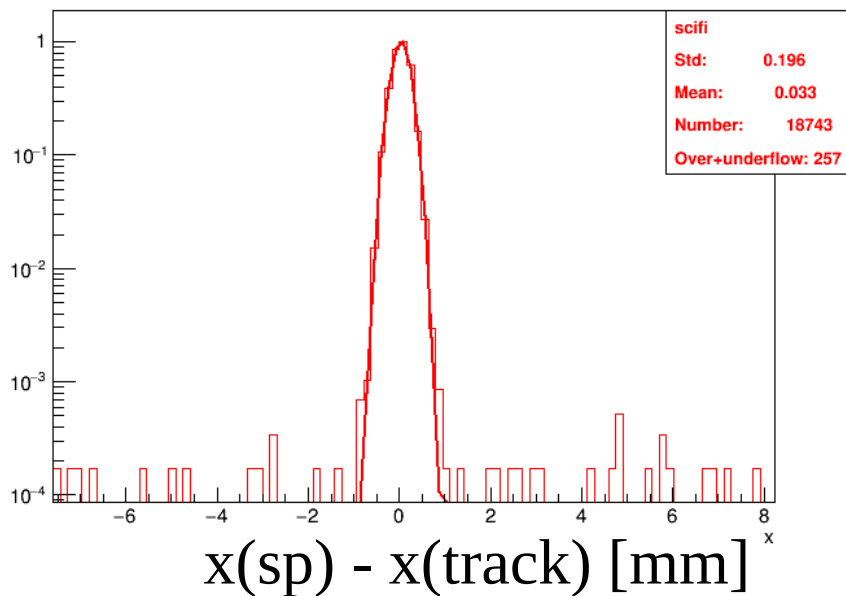


# Full Recon - cuts

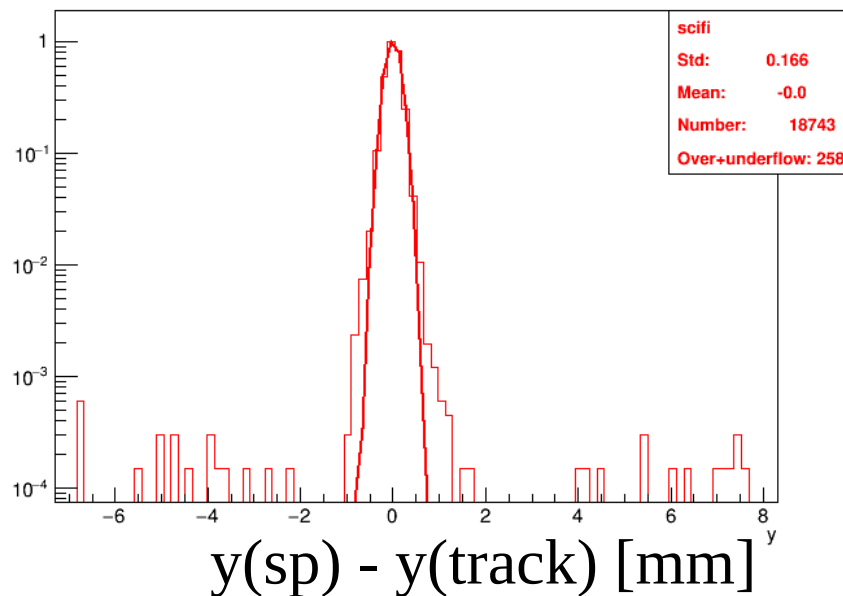


- Full Recon - VB's “all cuts passed” is now applied
- Compare space points with fitted tracks

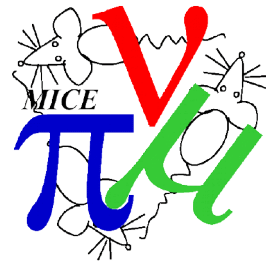
07469\_recon.rootz = 15062.0 mm



07469\_recon.rootz = 15062.0 mm



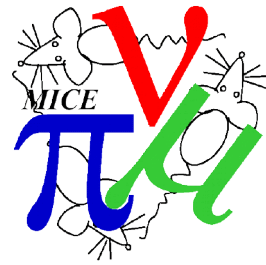
# Conclusion (track vs space point)



- There is no evidence from space point vs tracks for a tilt
- However, the signal could be hidden/lost by one of the cuts



# Global Track Fit



- Added a dynamic step size routine to the global track fit
- In principle this enables to set a smaller step size near to boundaries
- Also running in MAUS v2.5.0