Effect of SCE on TPC – Beam Matching

Leigh Whitehead for Jesal Mandalia

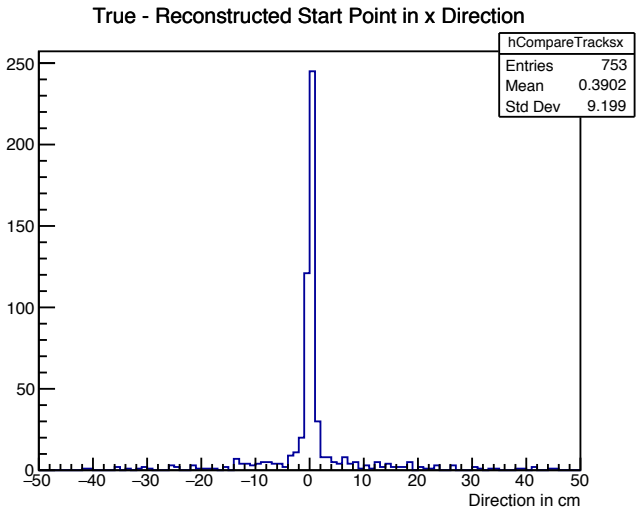
DRA Meeting

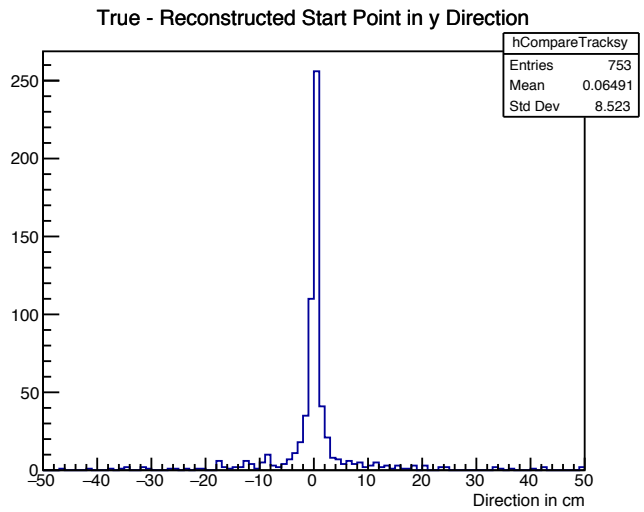
20/07/17

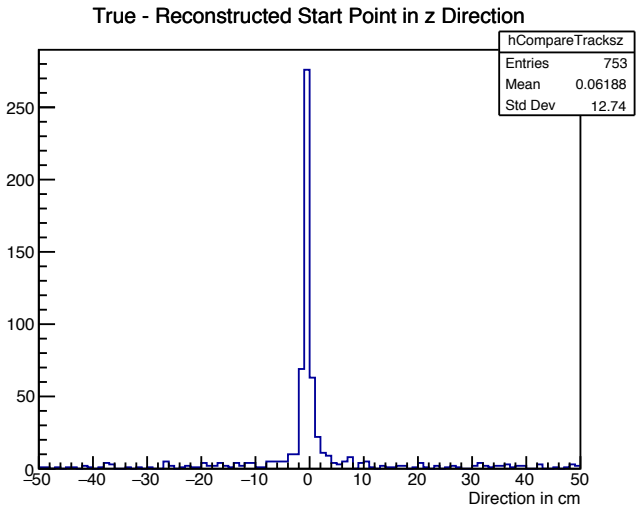
Introduction

- Our summer student Jesal has begun looking into how the space charge effect will affect the matching between the TPC and the beam
- For now, she has looked at MCC9, +3 GeV files
- Consider those tracks with a vertex position within a 1 m^3 around the expected beam spot position
- Look at true-reco for the track vertex position and direction

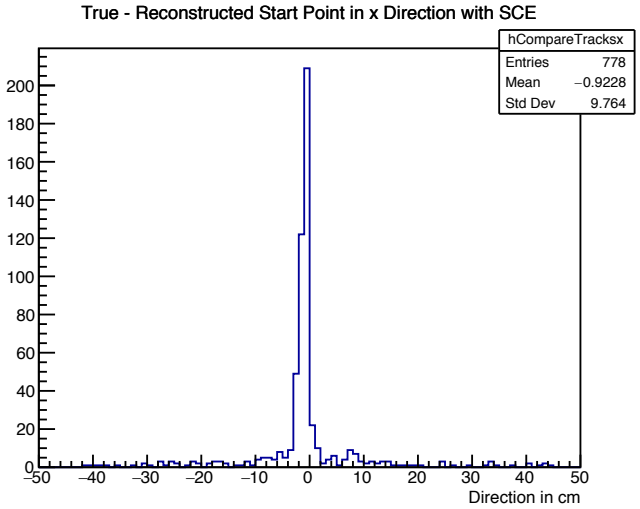
Track Vertex – No SCE

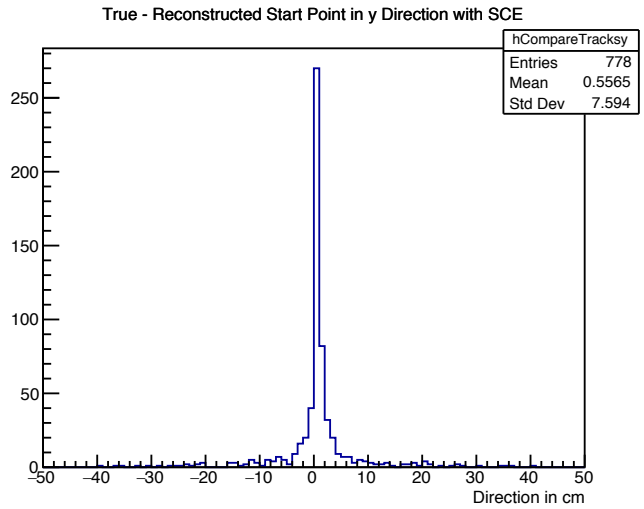


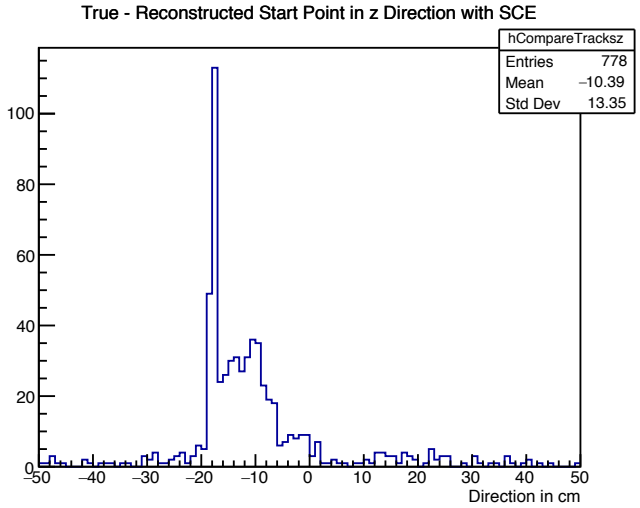




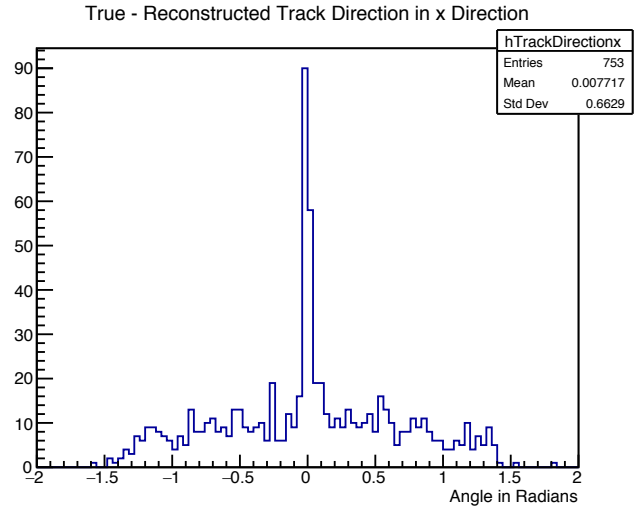
Track Vertex – SCE

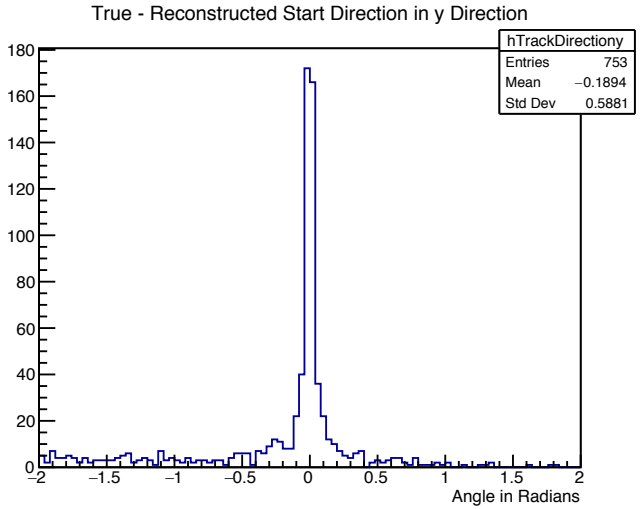


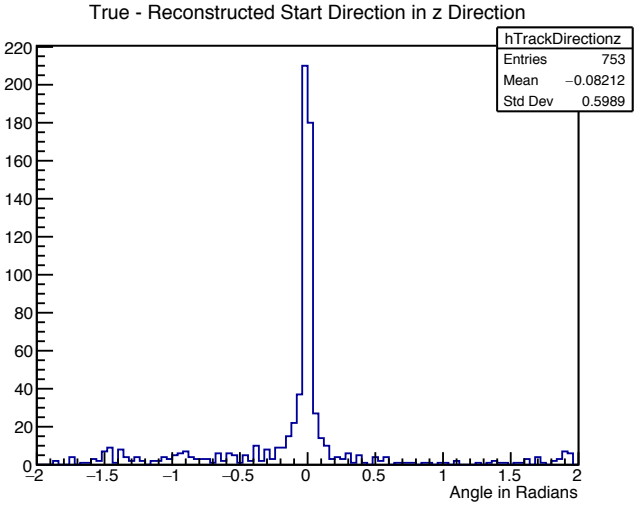




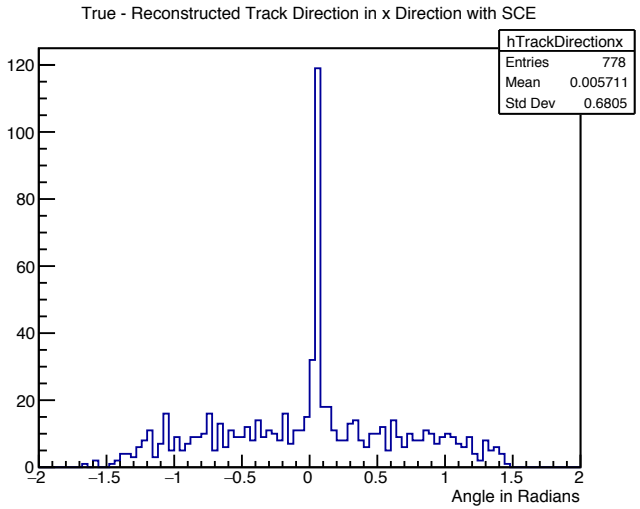
Track Vertex Direction – No SCE

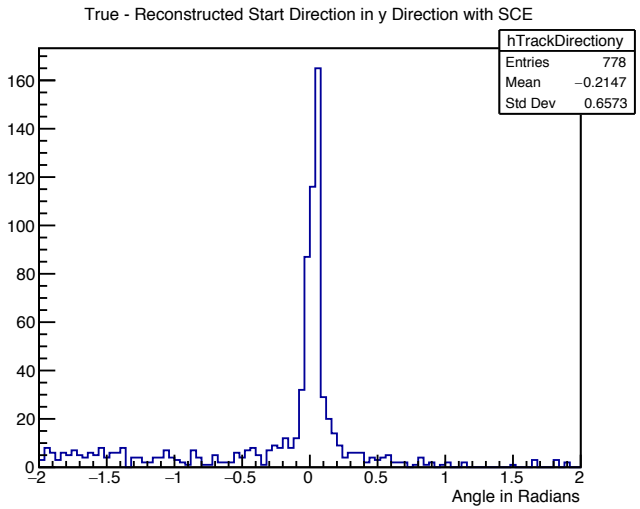


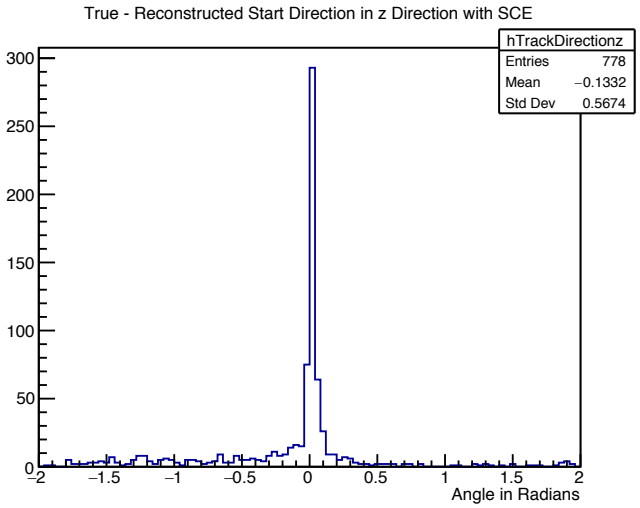




Track Vertex Direction – SCE







Next Steps

- Jesal has begun extrapolating the reconstructed tracks back to the true production point (the start of the beam window)
- This acts as a proxy of matching back to the beam monitor since that information currently isn't stored in LArSoft
- She will present this work next week