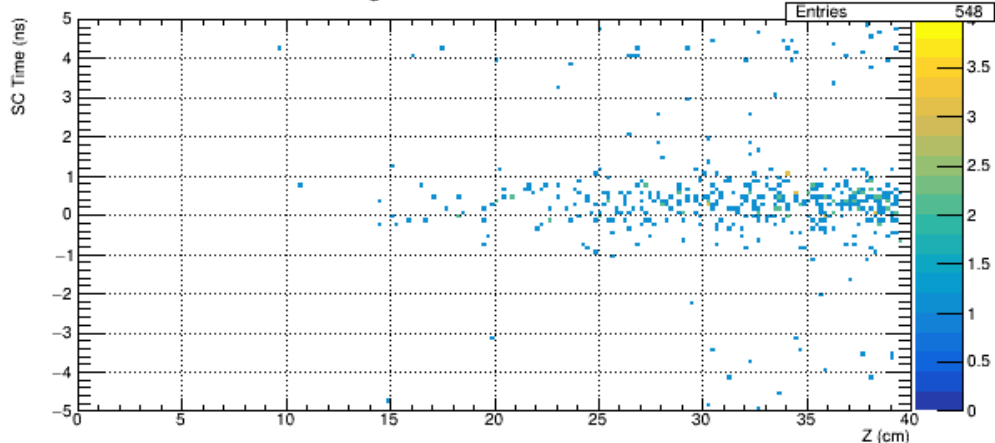


Start Counter in 2018

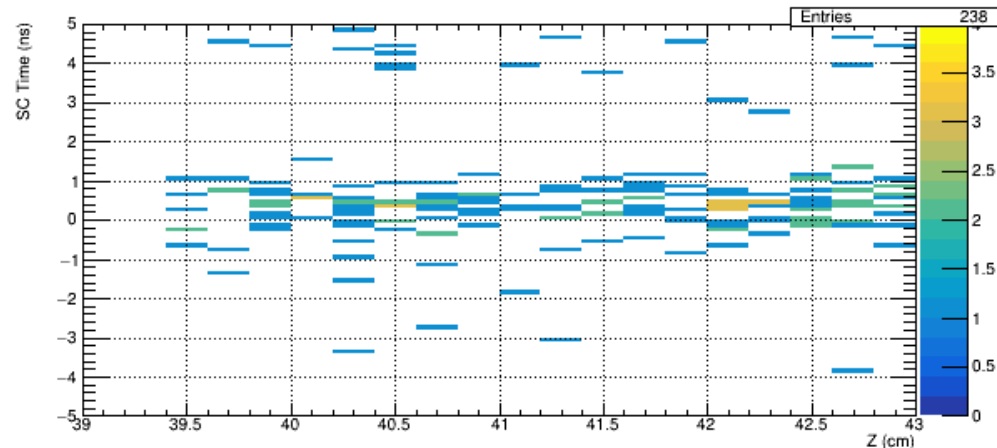
Mahmoud Kamel

Start Counter Time After Propagation Time Corrections Using the current CCDB constants

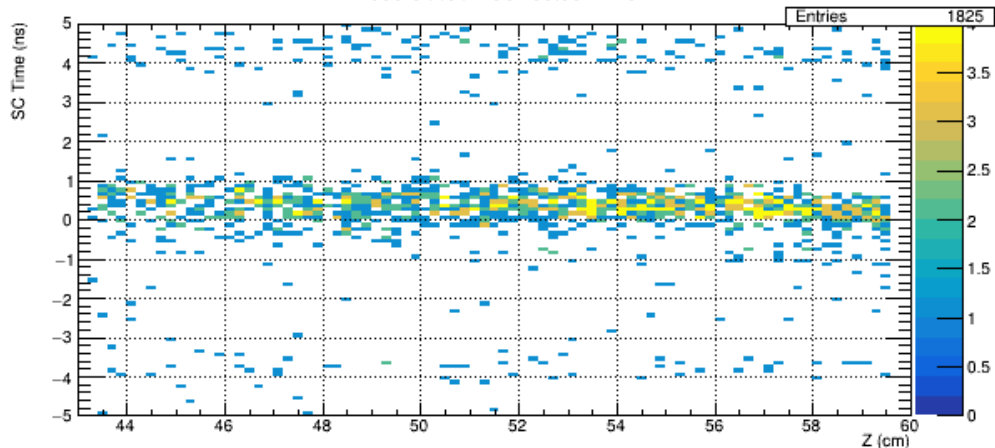
Straight Section Corrected Time



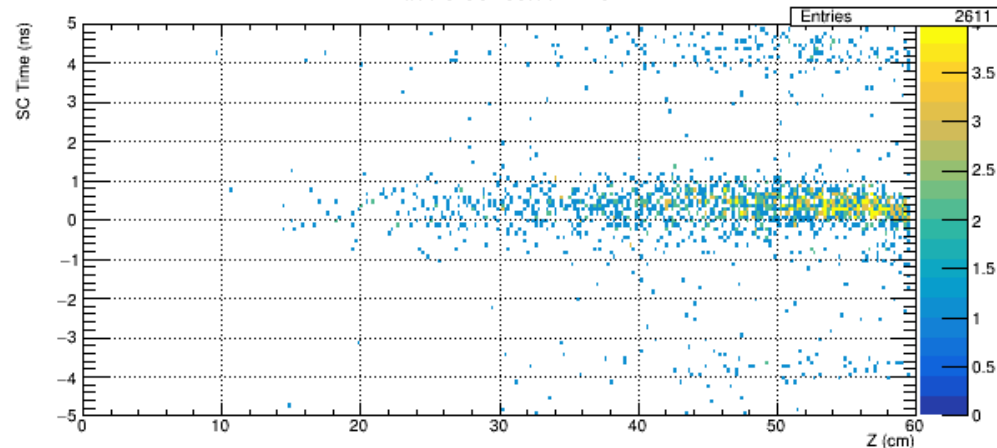
Bend Section Corrected Time



Nose Section Corrected Time

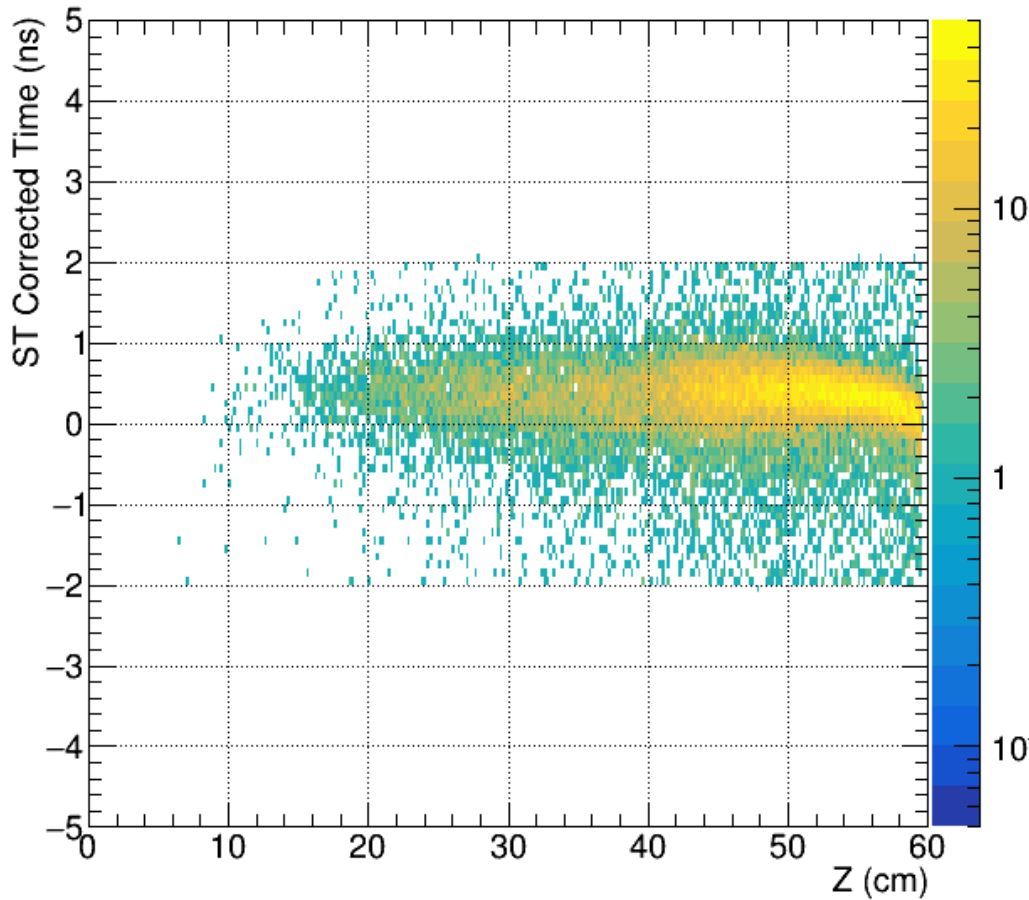


Paddle Corrected Time

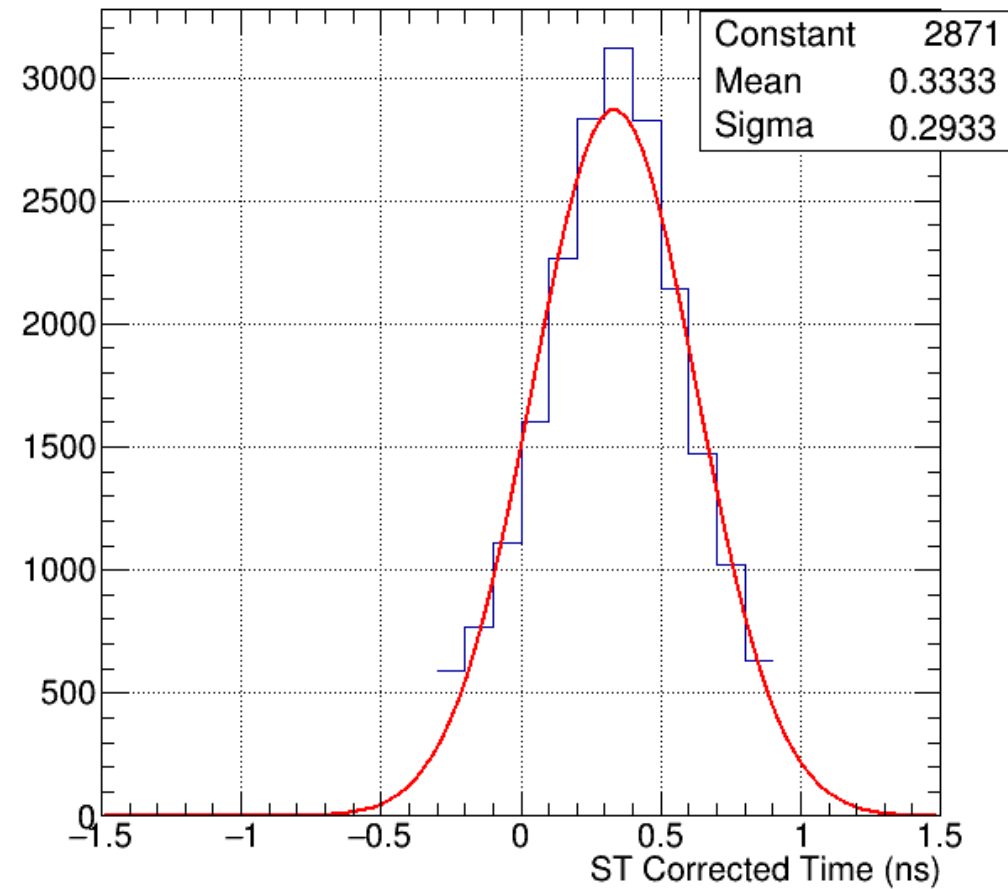


Time Resolution

Corrected Time vs. Z

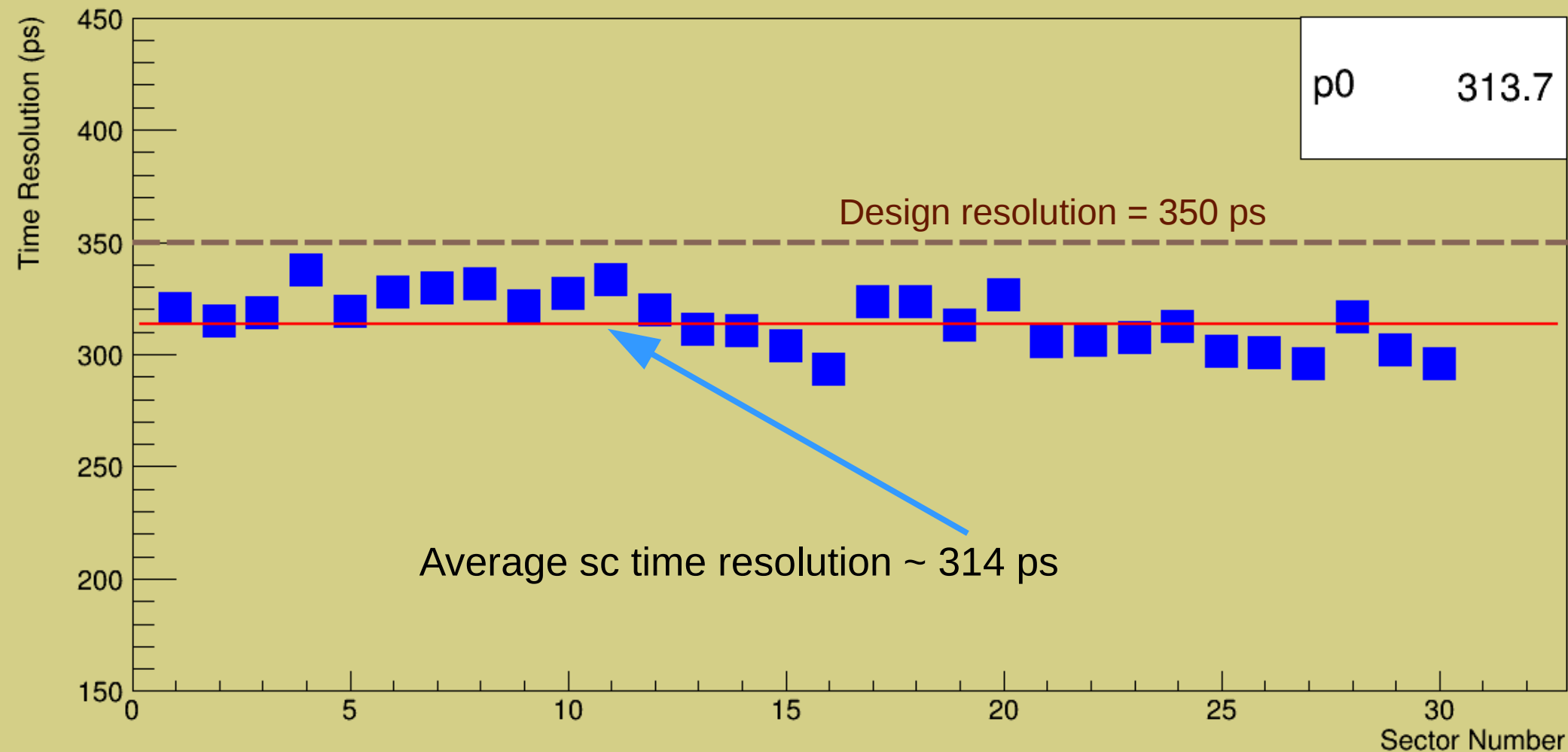


Corrected Time vs. Z



Time Resolution

Time Resolution After Applying Propagation Time Corrections



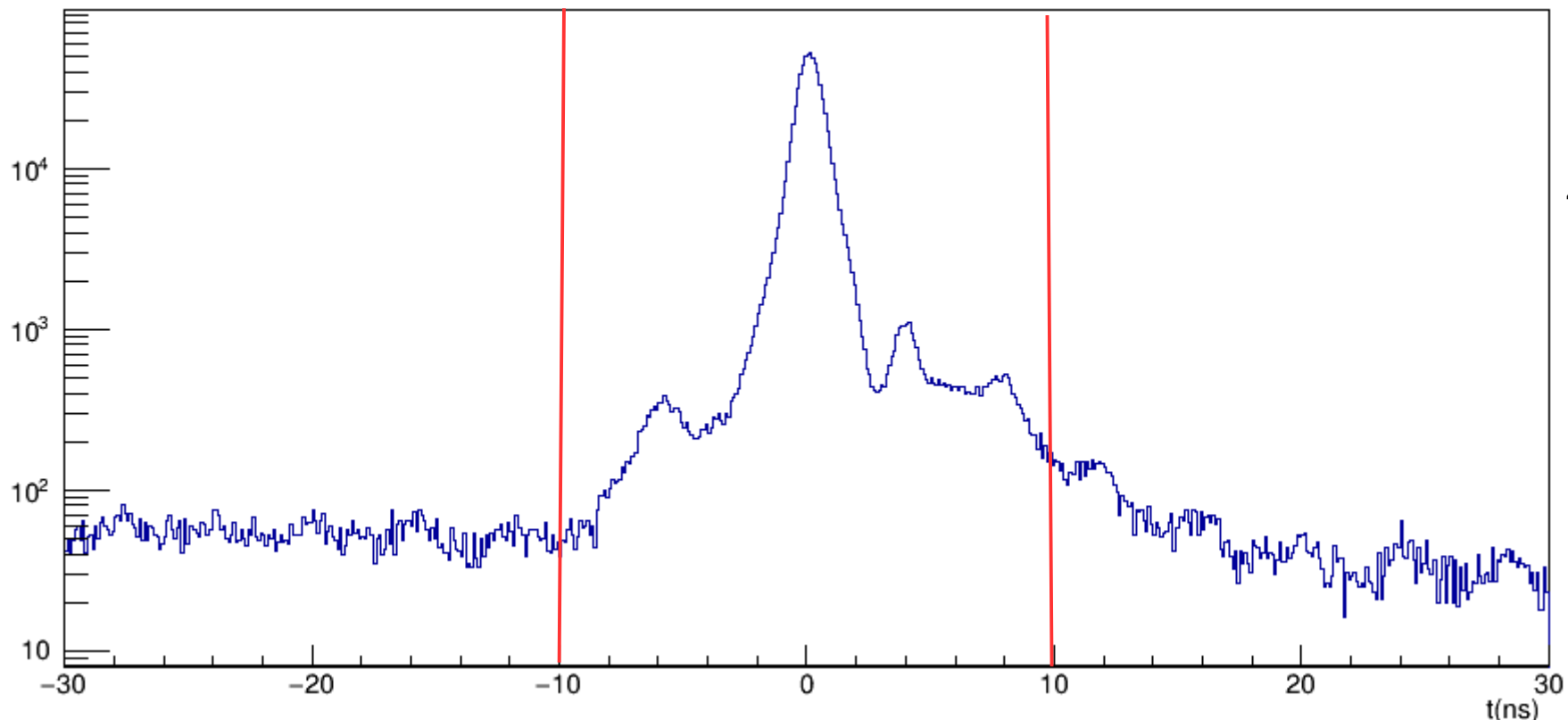
Efficiency for run 41137

Track Selection

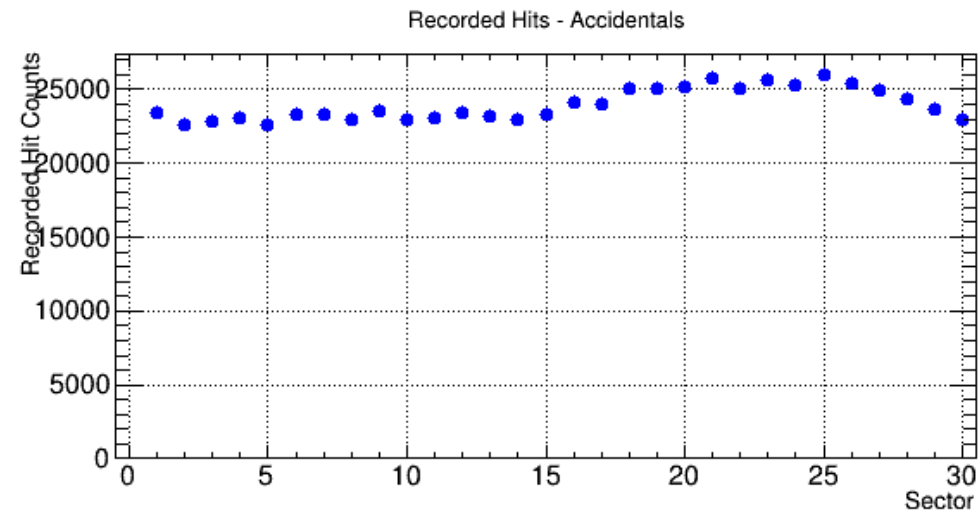
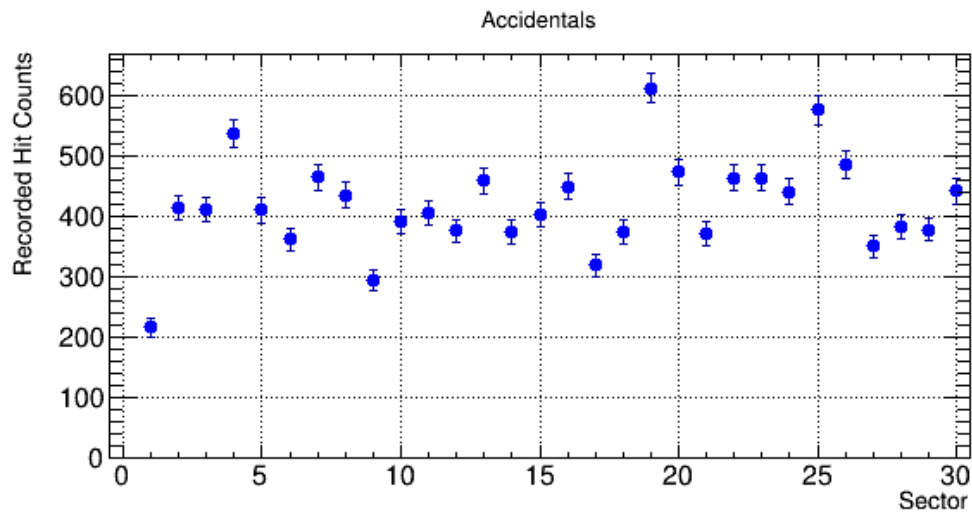
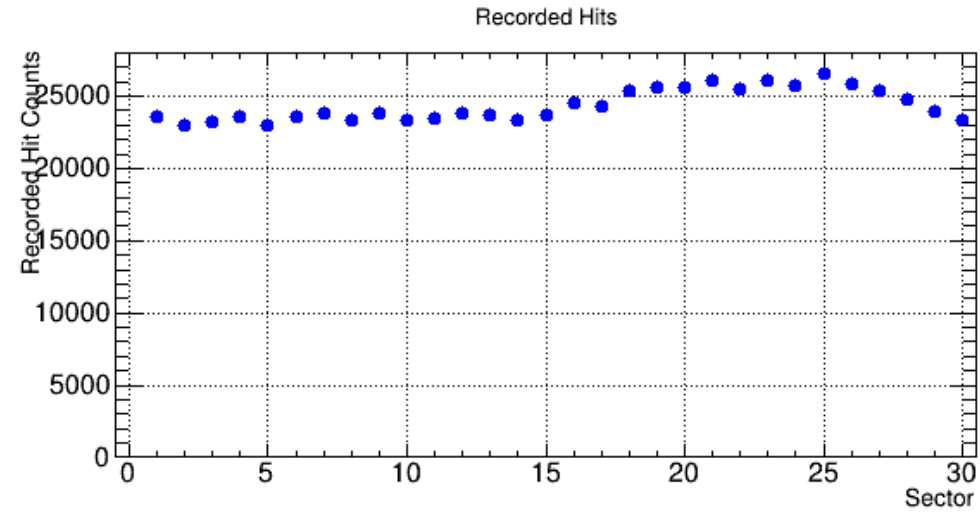
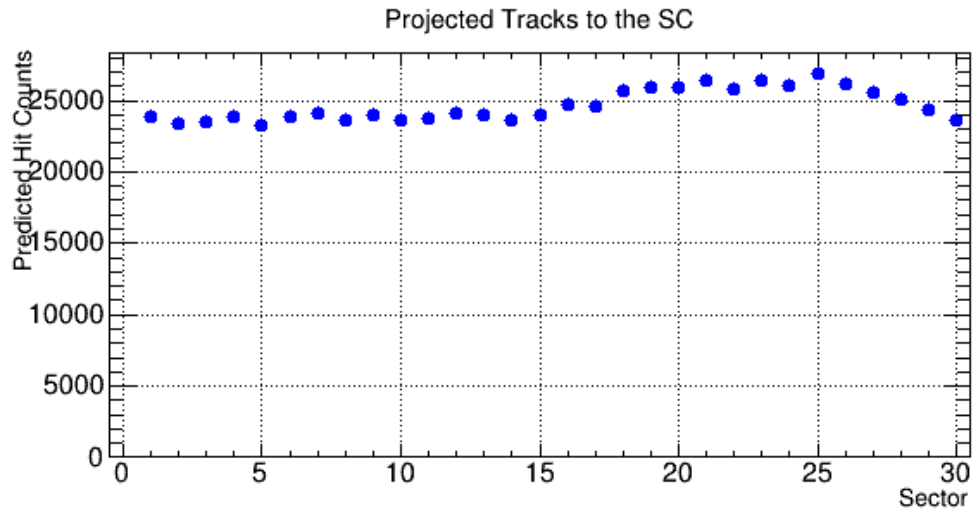
- Do not use SC time in track fitting.
- Get a quality charged track with the following cuts:
 - Number of Hits per track ≥ 14
 - Track_FOM $\geq 2.69E^{-3}$
 - $\text{abs}(\text{vertex}_z - \text{target center}) \leq 15$ cm
 - Radial cut < 1 cm
- The track must be matched to BCAL OR (FCAL && TOF).
- Get the t_0 of each track projected to a SC sector (RF bunch time).
- Count the number of tracks projected to hit the SC.

SC Hits and Efficiency Calculations

- Loop over the SC hits determined by the hit factory.
 - Get the hit time t . Correct for the propagation time, flight time.
 - If $-10 < t-t_0 < 10$ ns, check if the same projected sector had hit or its nearest paddle, (Count SC hits).
 - Calculate the accidentals by counting the out of time hits for $-20 \text{ ns} < t-t_0 < -10$ && $10 < t-t_0 < 20$ ns
 - Calculate the accidental subtracted efficiency = $(\text{SC hits} - \text{accidentals}) / \text{Projected hits}$.
- $\text{SC_time} - \text{RF}$

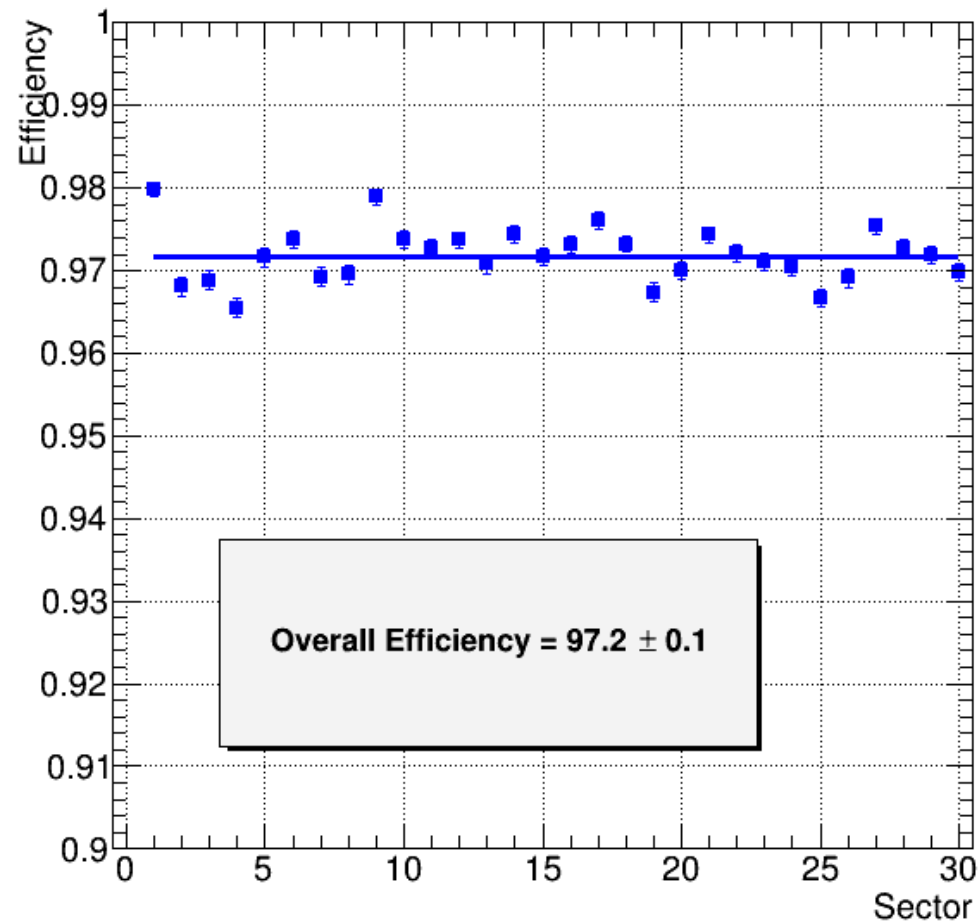


Projected tracks and recorded hits without and with accidentals subtracted in Run 41137

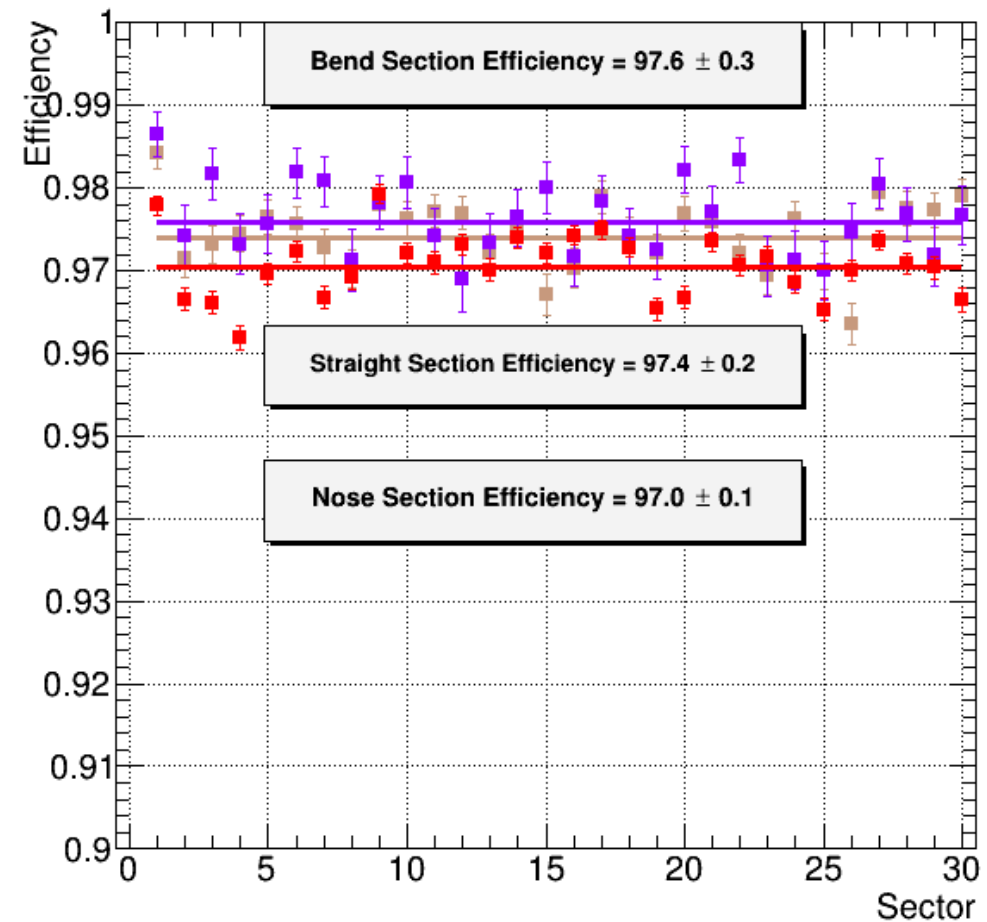


SC Efficiency with accidentals subtracted

Accidental subtracted efficiency

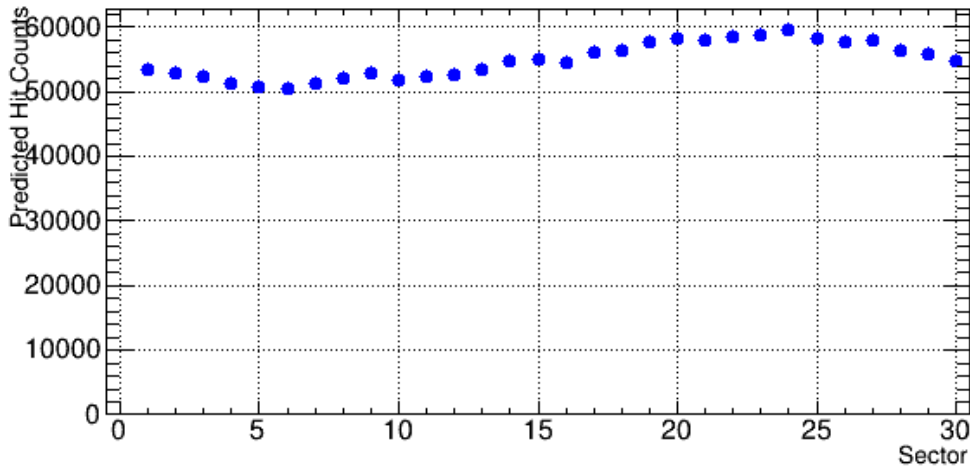


Accidental subtracted efficiency

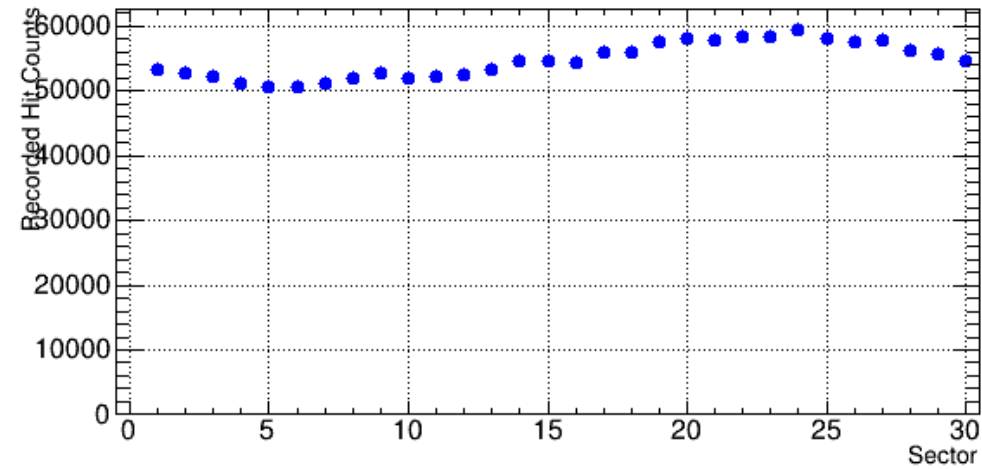


Projected tracks and recorded hits without and with accidentals subtracted in Simulation

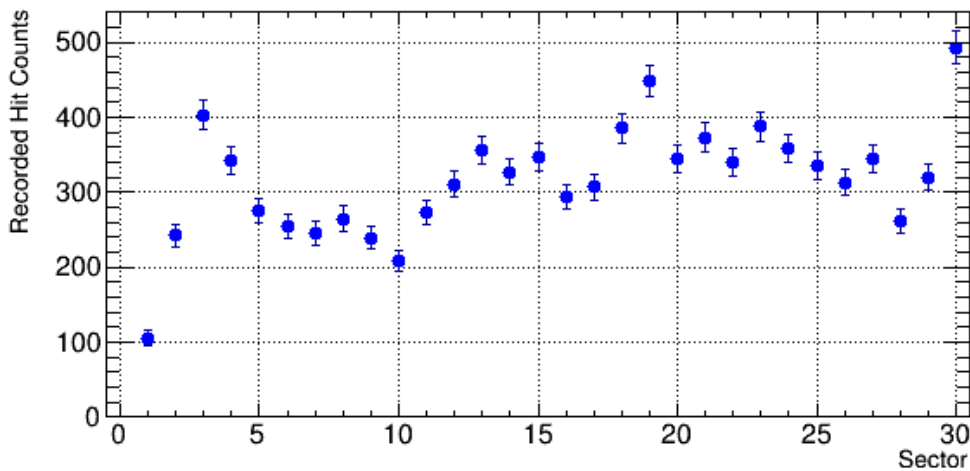
Projected Tracks to the SC



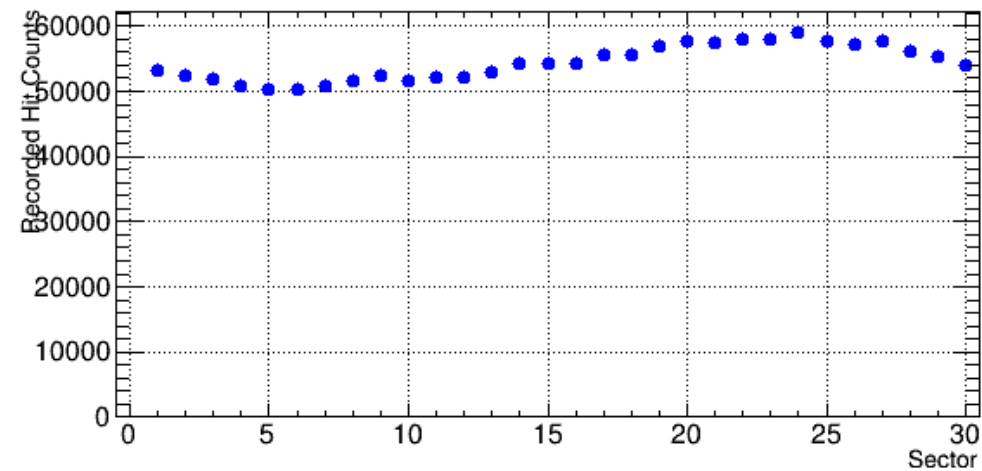
Recorded Hits



Accidentals

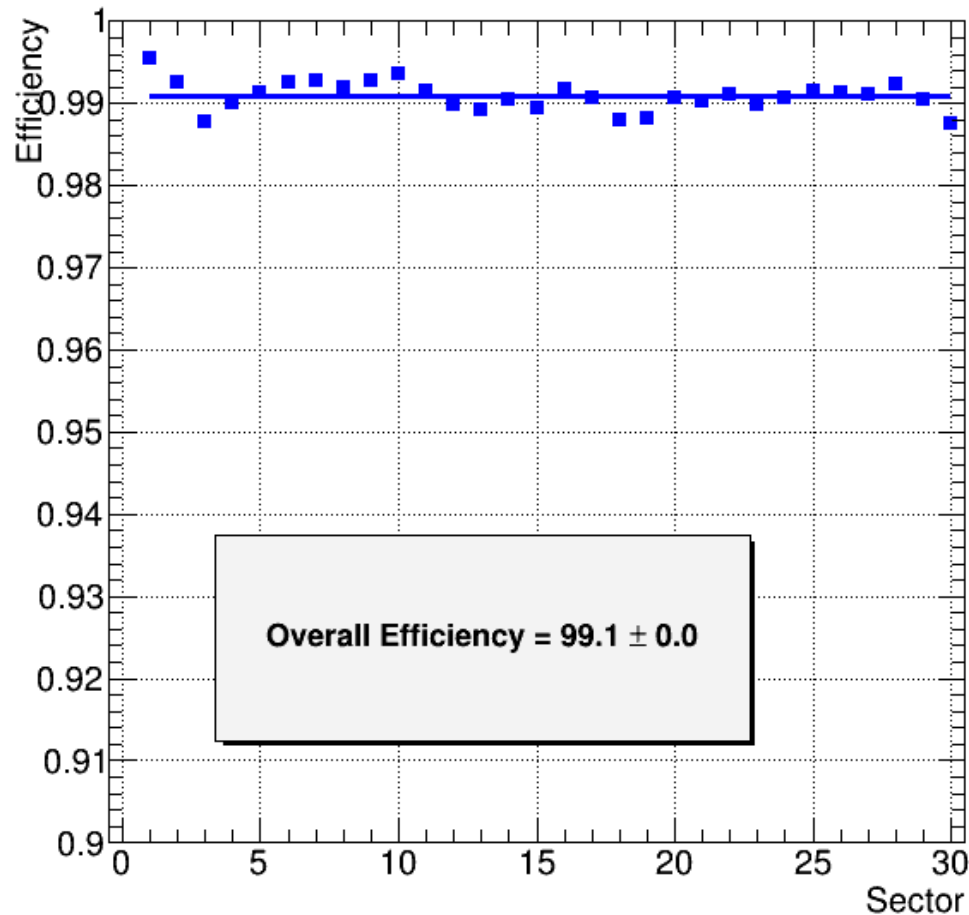


Recorded Hits - Accidentals



SC Efficiency with accidentals subtracted Using 1M event of bggen SIM sample

Accidental subtracted efficiency



Accidental subtracted efficiency

