

Start Counter Efficiency Update

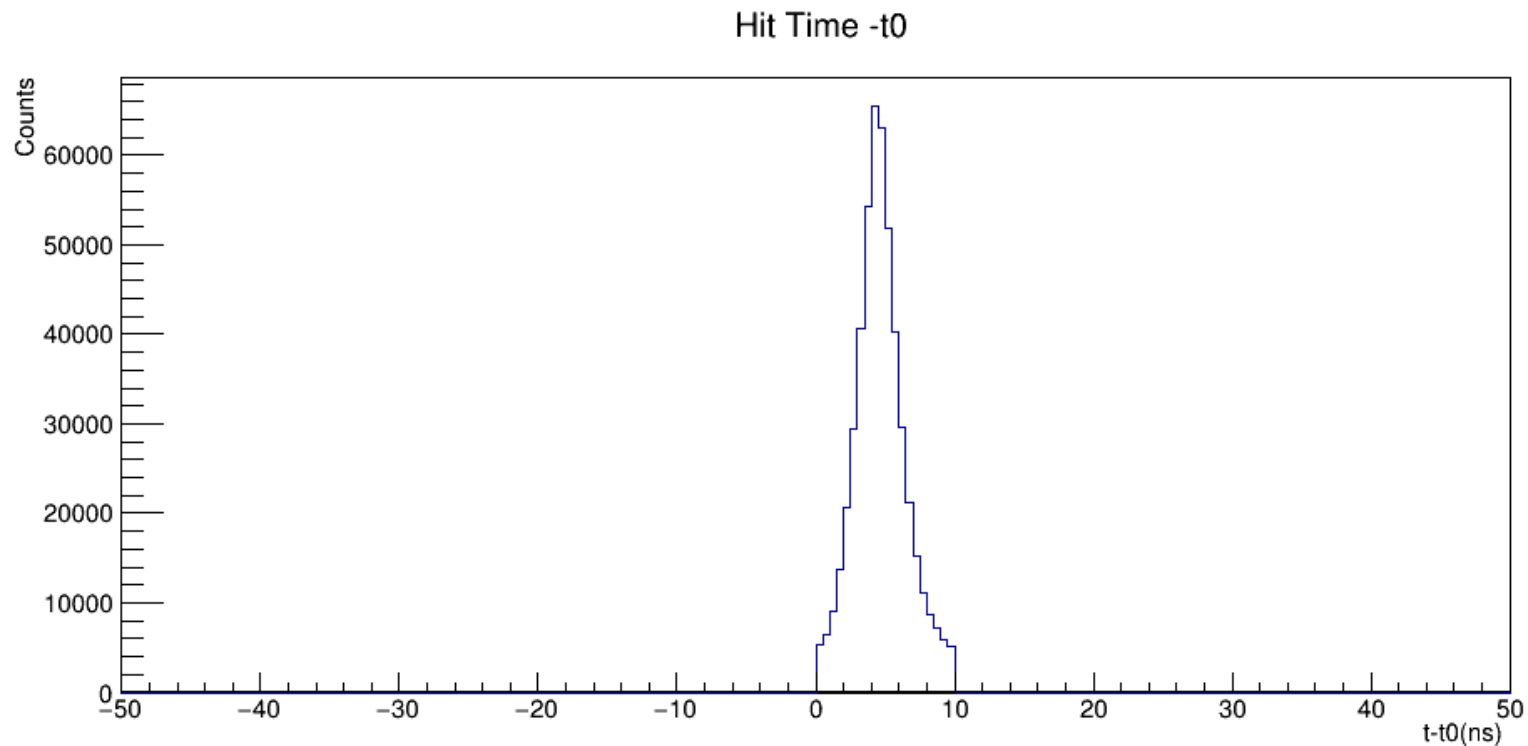
Mahmoud Kamel

Projected tracks selection and Efficiency Calculations

- 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.

SC Hits and Efficiency Calculations

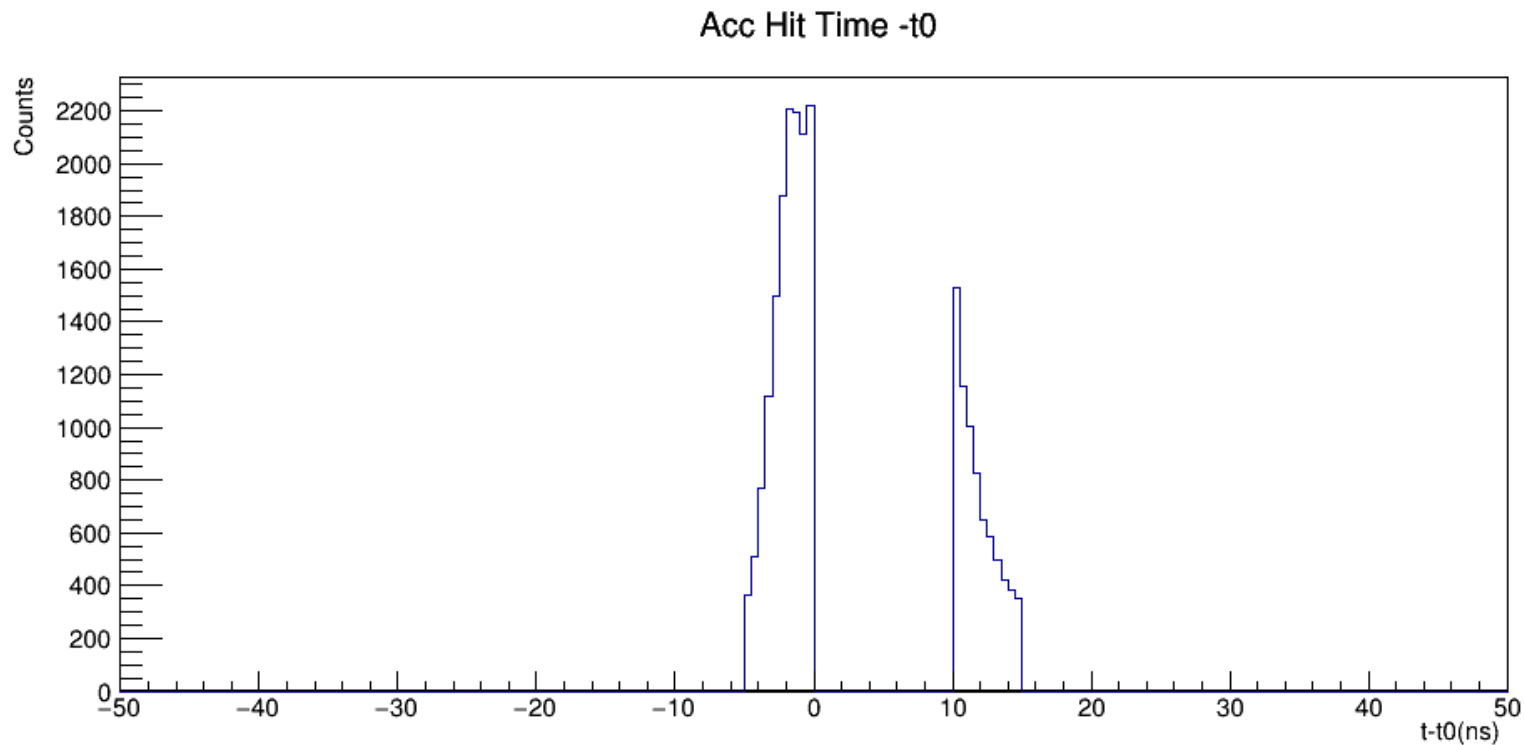
- Loop over the SC hits determined by the hit factory.
- Get the hit time t .
- If $0 < t-t_0 < 10$ ns, check if the same projected sector had hit or its nearest paddle, (SC hits).



0.5M events of
run30279

SC Hits and Efficiency Calculations

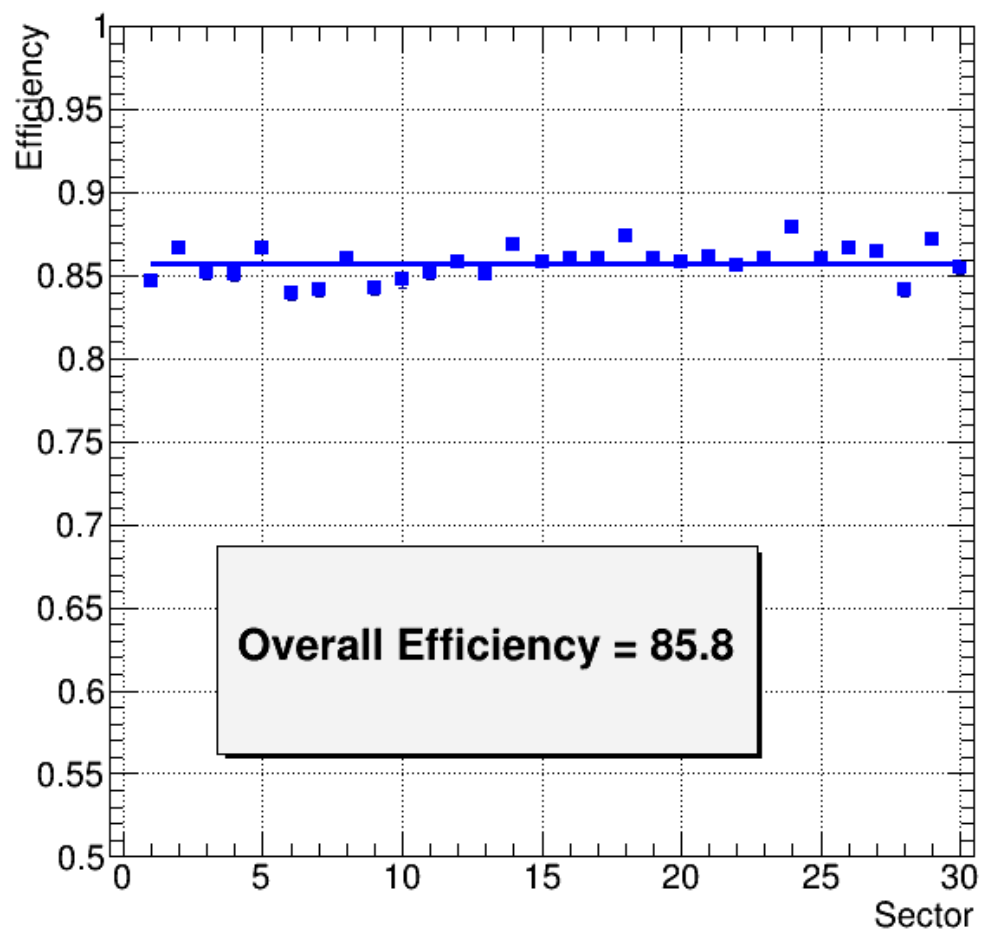
- Calculate the accidentals by counting the out of time hits for $-5 < t-t_0$ && $t-t_0 < 15$
- Calculate the accidental subtracted efficiency = (SC hits - accidentals) / Projected hits.



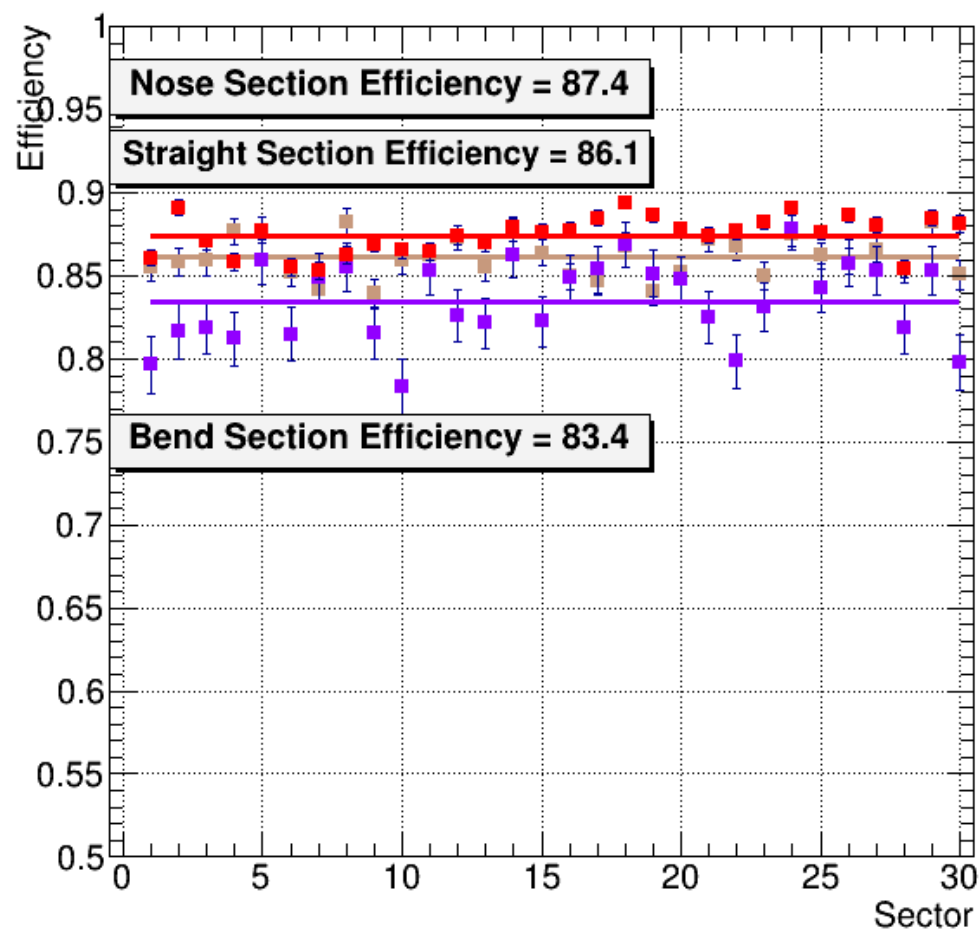
0.5M events of
run30279

SC Efficiency

Accidental subtracted efficiency



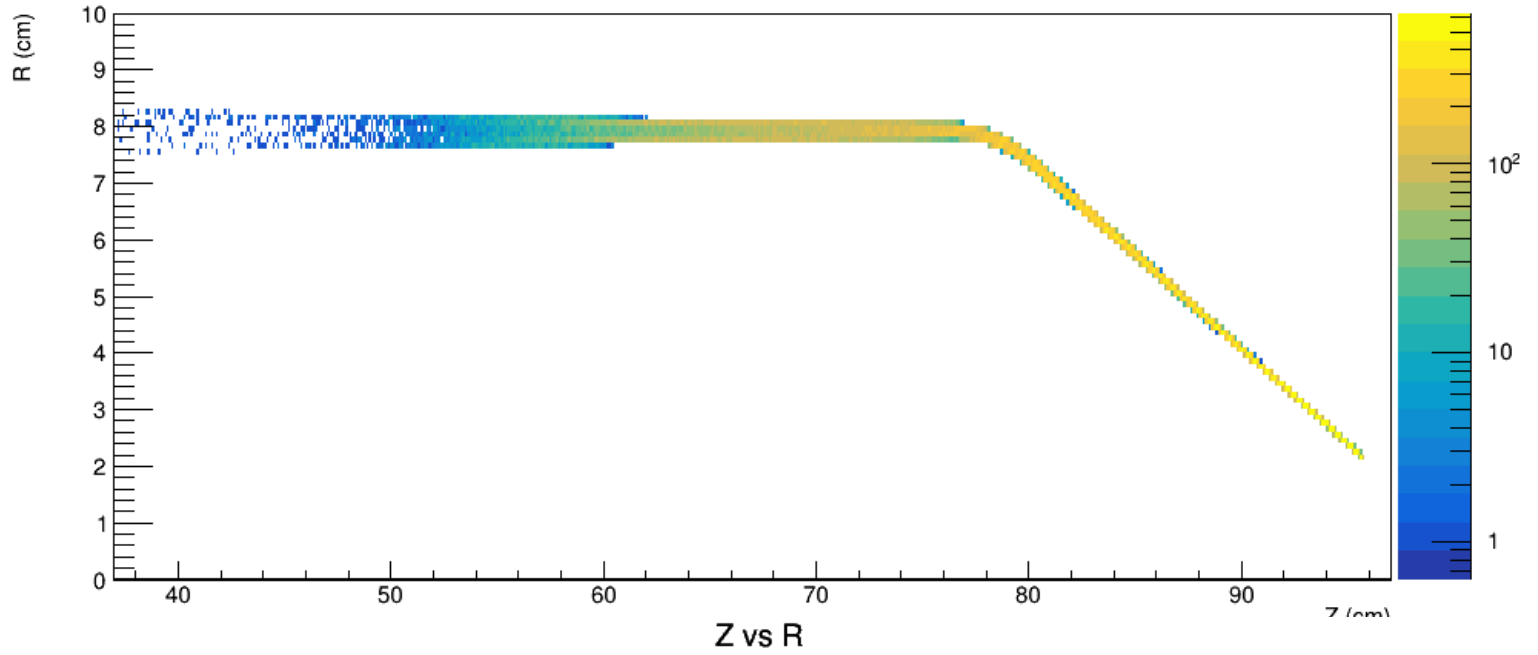
Accidental subtracted efficiency



R vs Z (Old and new)

Z vs R

Old



New

