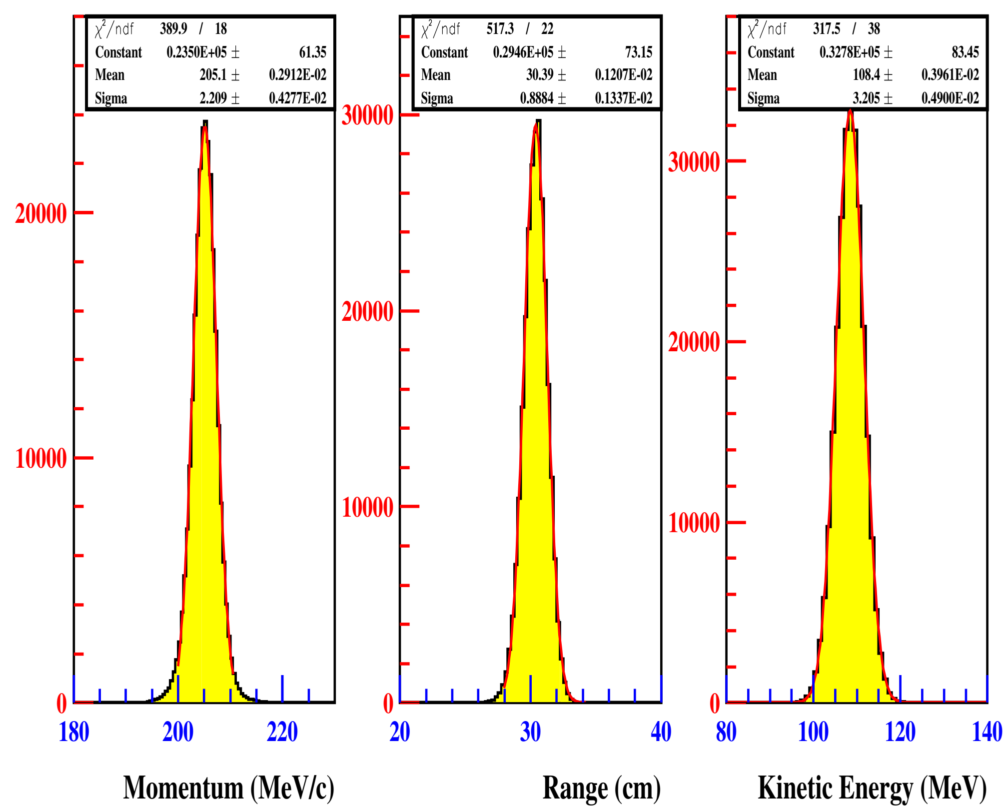
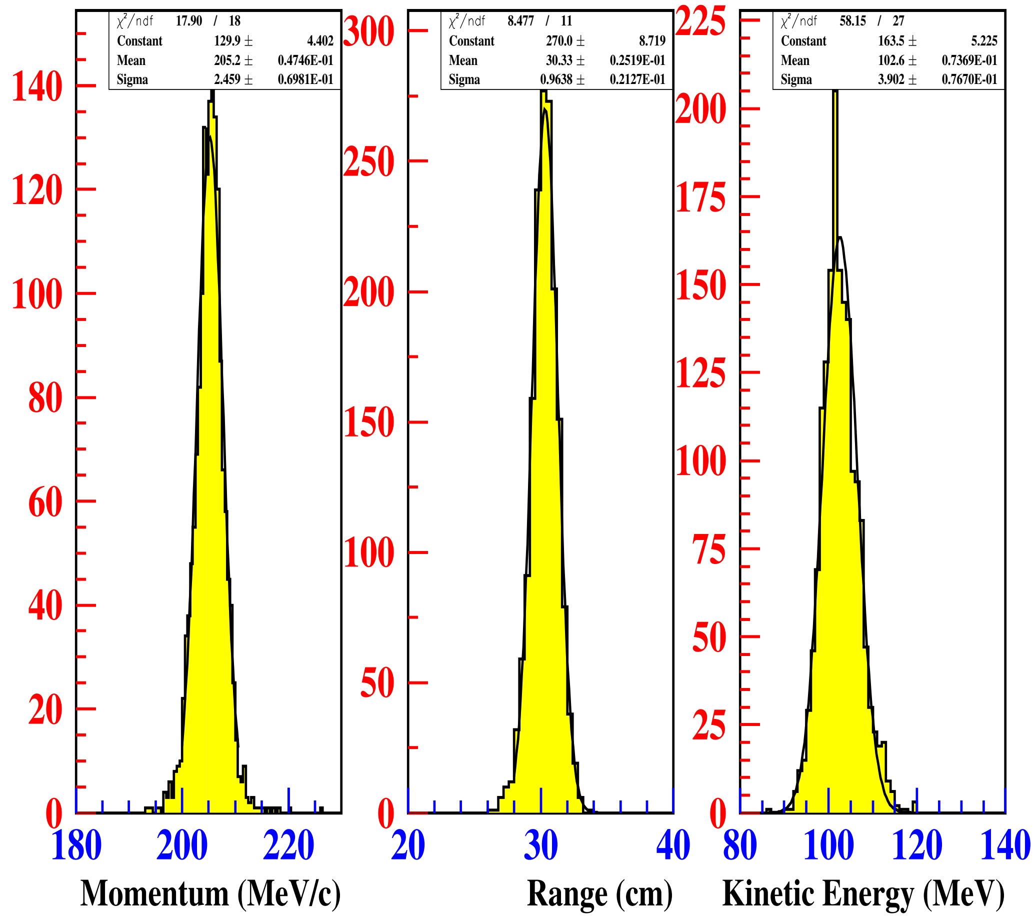
• Kinematic measurables in 1998

- Momentum resolution $\sigma_P/P \sim 1.08$**%**.
- Range resolution $\sigma_R/R \sim 2.9$**%**.
- Energy resolution $\sigma_E/\sqrt{E(\textbf{GeV})} \sim 1.0$**%**.



- **Kinematic measurables in 2002.1**

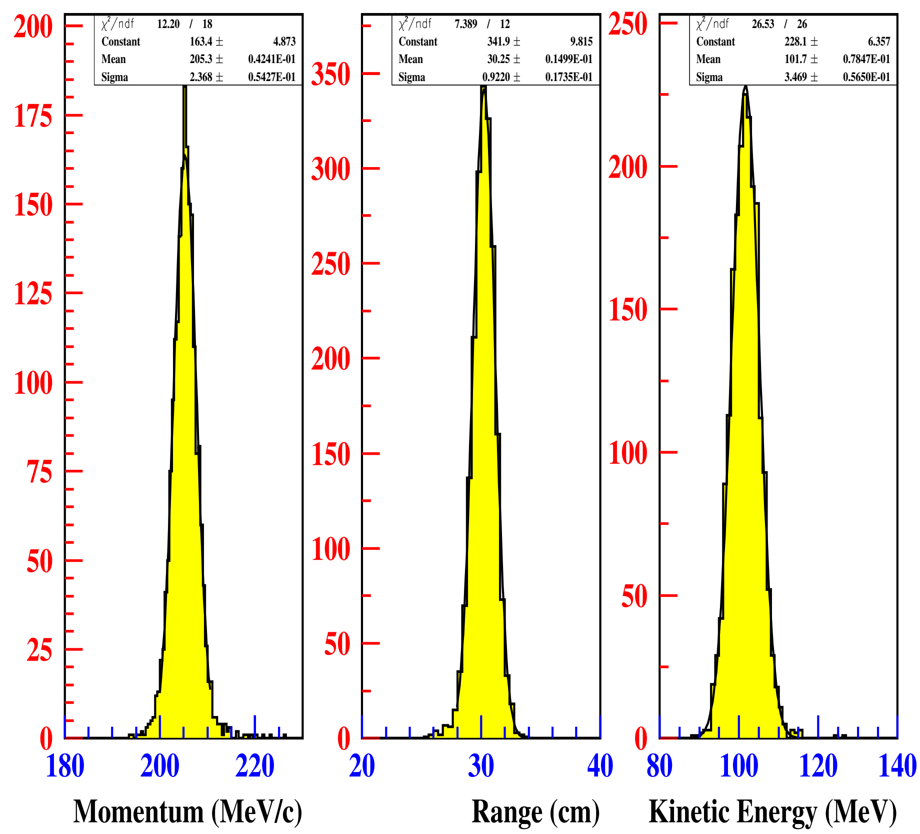
  - **Momentum resolution** $\sigma_P/P \sim 1.20\%$.
  - **Range resolution** $\sigma_R/R \sim 3.0\%$.
  - **Energy resolution** $\sigma_E/\sqrt{E(\mathbf{GeV})} \sim 1.1\%$.



  - $\pi\nu\bar{\nu}$**(1) data without modified UTC electronics.**
  - **Same codes as used in 1998.**

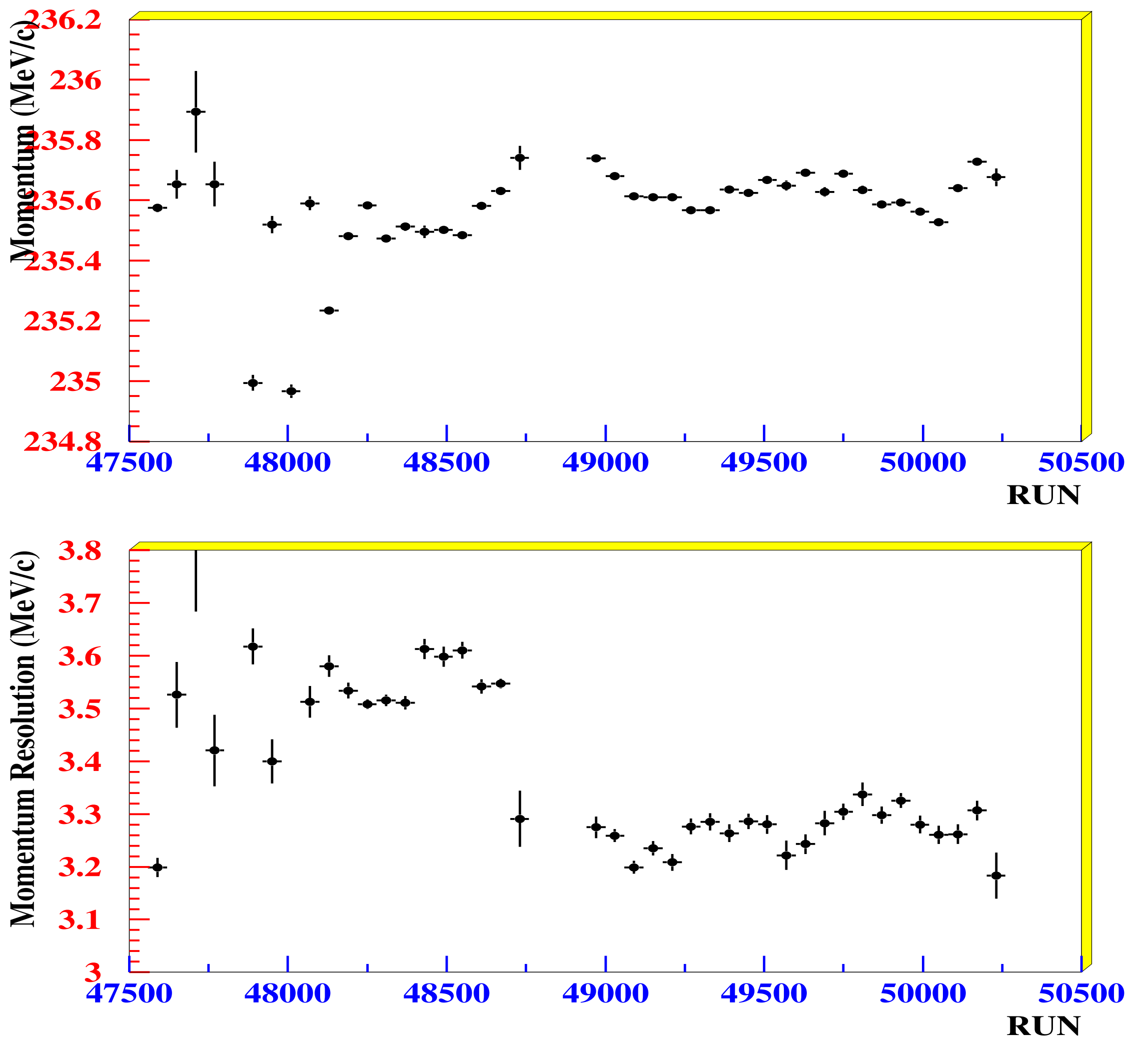
- **Kinematic measurables in 2002.2**

  - **Momentum resolution** $\sigma_P/P \sim 1.15\%$.
  - **Range resolution** $\sigma_R/R \sim 3.0\%$.
  - **Energy resolution** $\sigma_E/\sqrt{E(\mathbf{GeV})} \sim 1.1\%$.



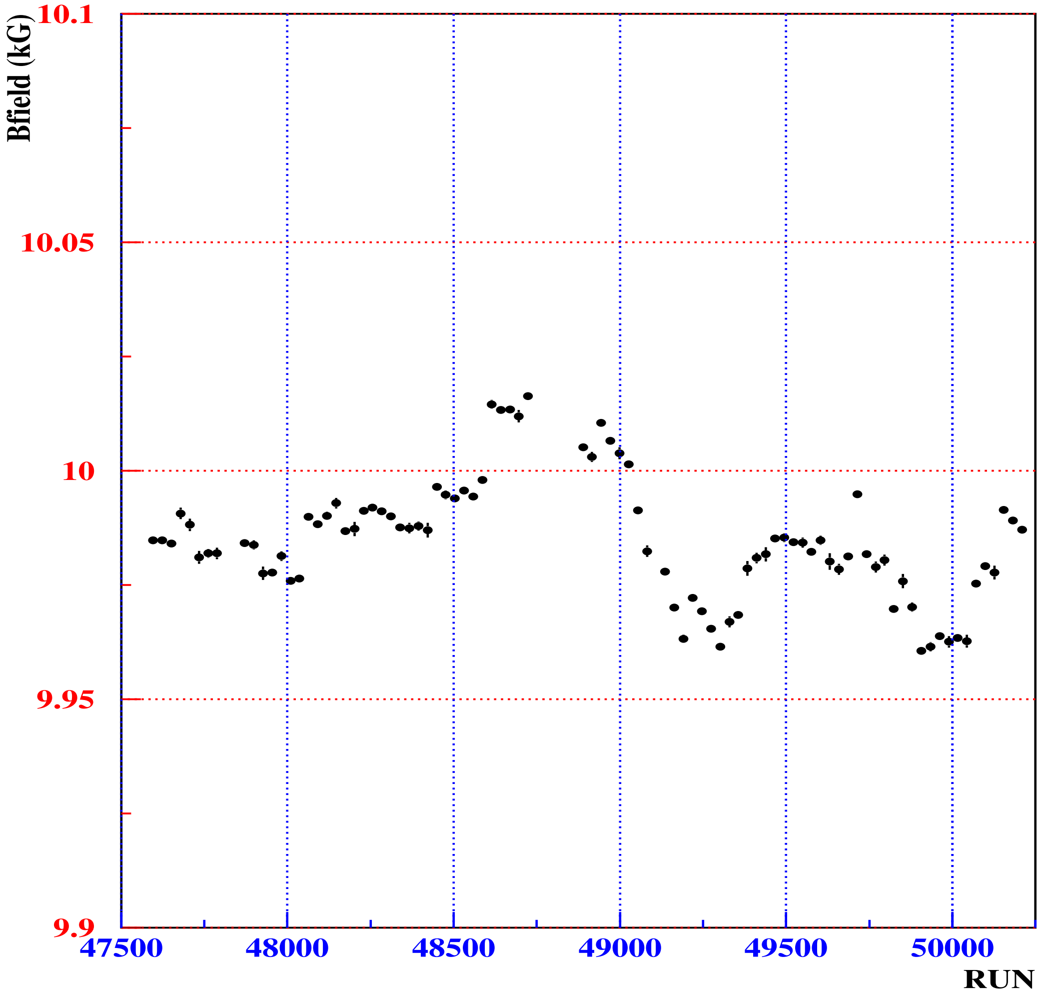
  - $\pi\nu\bar{\nu}$**(1) data with modified UTC electronics.**
  - **Same codes as used in 1998.**

• Momentum resolution variation



- **Same codes as used in 1998.**
- **With modified sofeware, momentum resolution can be improved.**

• Magnetic field variation



- Constant B-field in construction.
- Variation should be inlcuded.

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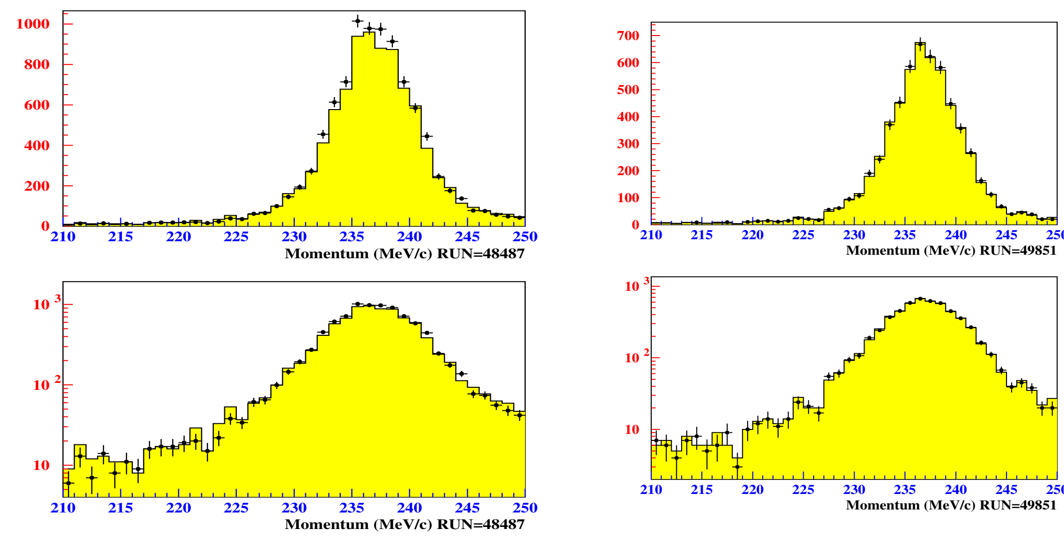
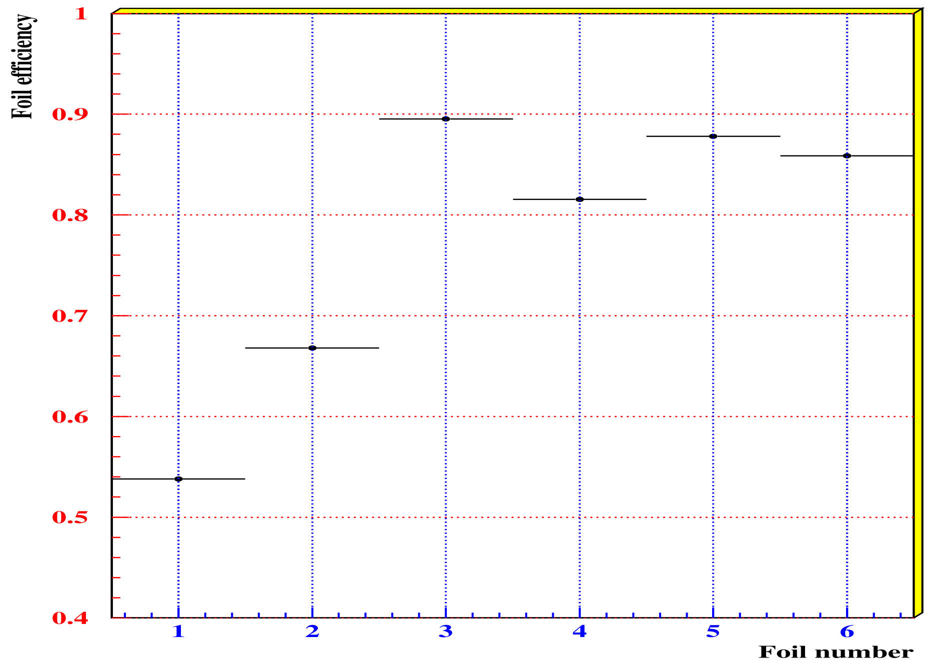
- **UTC softeware modification**
  - **The recovery of the missing ADC information from TDC hits.**

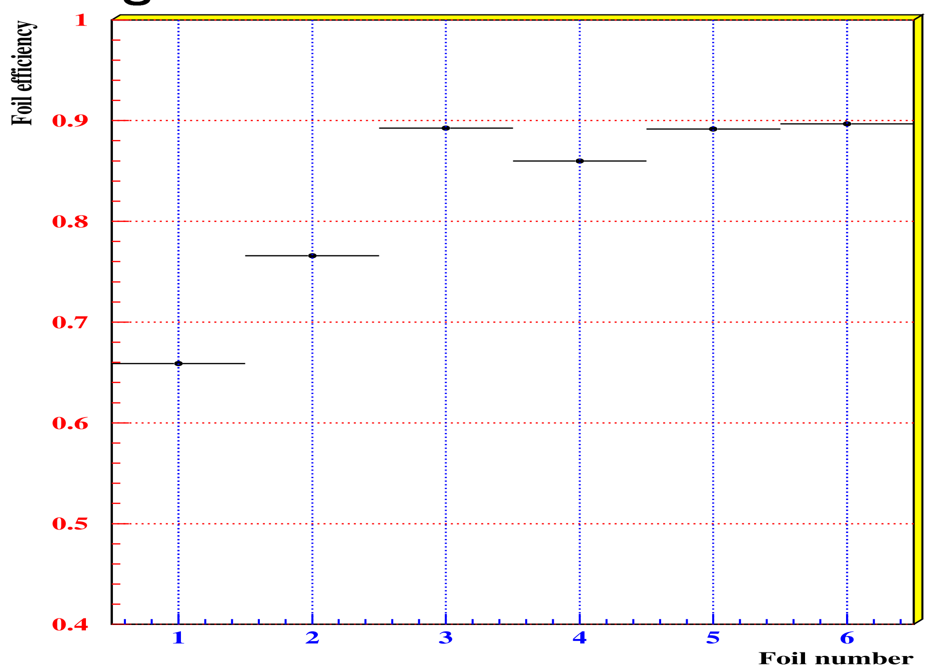


    - **Effect seen for ADC missing cases.**
    - **Little effect found after modification.**
  - **Qualification files for all the UTC hits.**
    - **Dead channels.**
    - **Hot channels.**
  - **Periodic zero timing (xy) and ADC gain factor (z) calibrations.**
  - **Offline pedestals**
  - **UTC geometry alignment**
  - **Target-UTC geometry match**

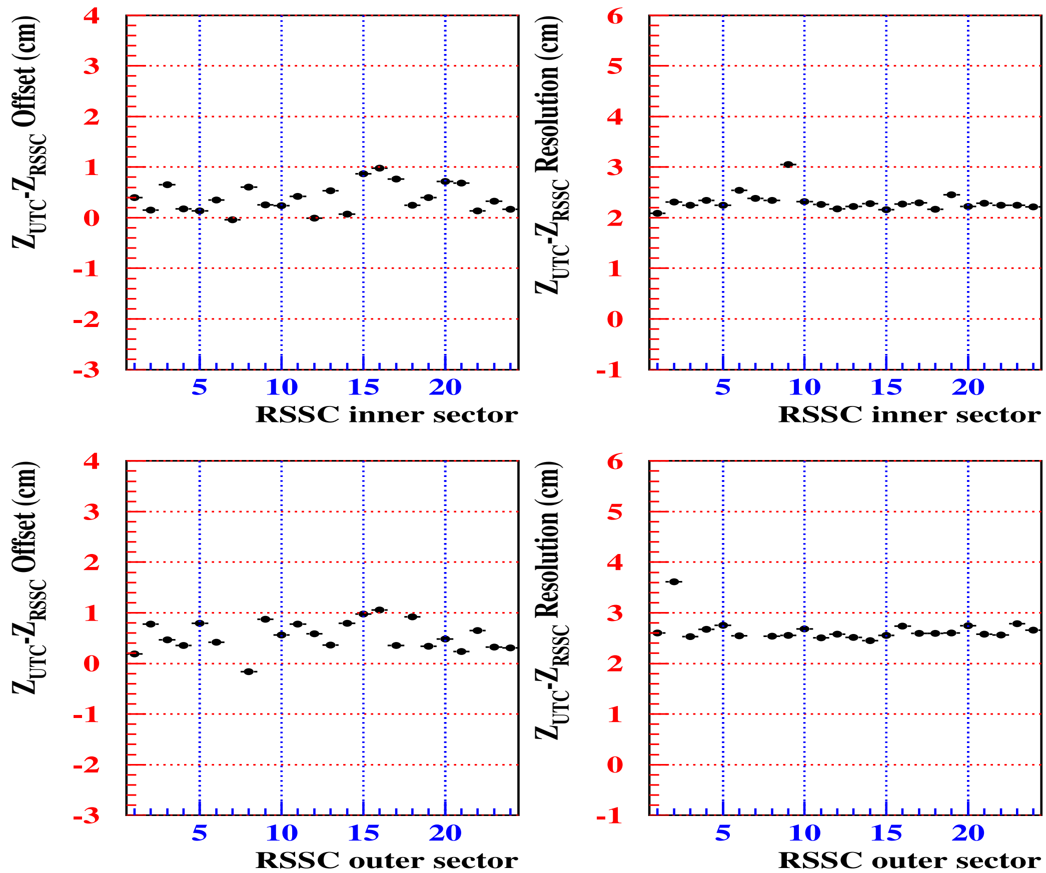
- **UTC foil efficiencies**
  - Without using TDC information



  - Using TDC information



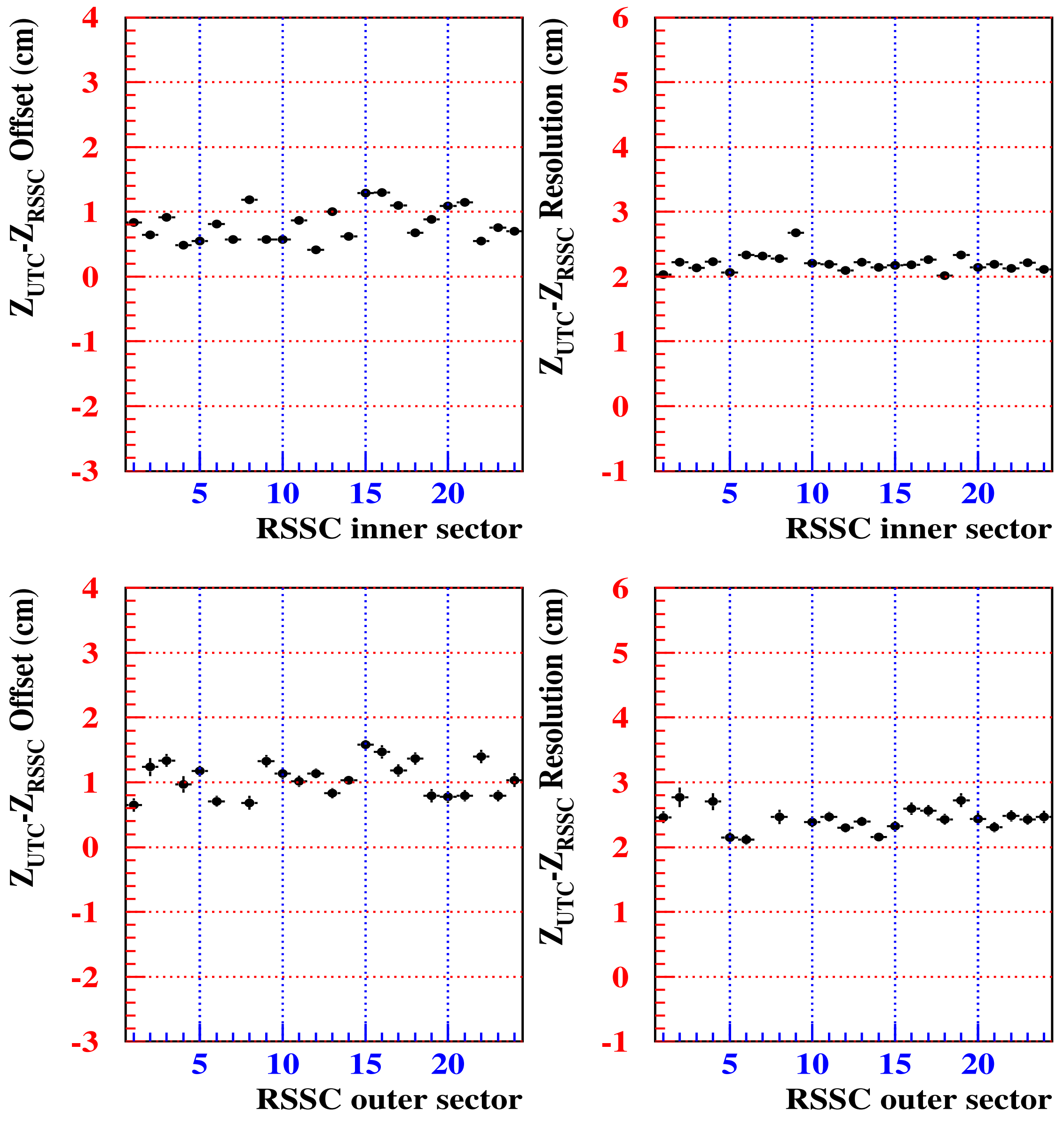
• RSSC performance for muons



Source	UTC+RS	RSSC	Total
Inner (cm)	1.35	1.55	2.05 (2.30) (3.0)
Outer (cm)	2.10	1.55	2.38 (2.60) (2.9)

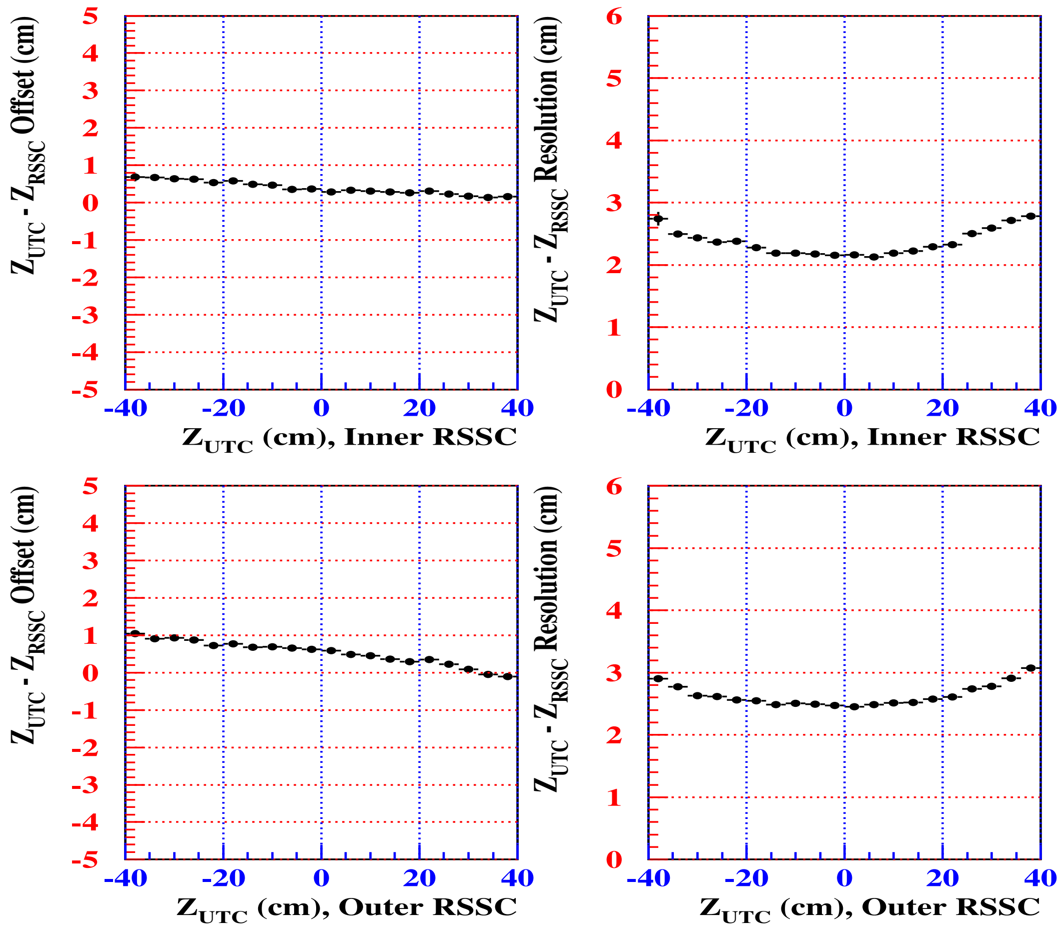
Better than 1998 but somewhat larger than the expected.

• RSSC performance for pions



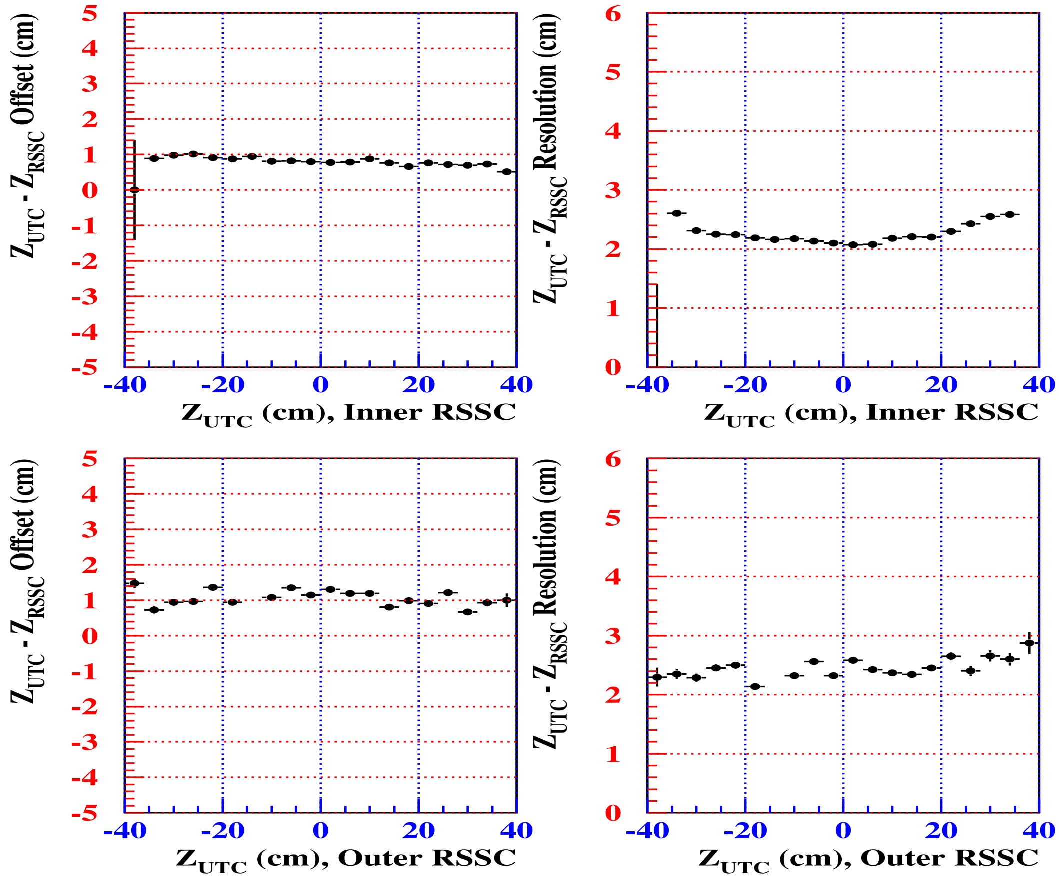
Significant offset observed.

- **Up and down stream RSSC performance for muons**



- **Difference bewteen up and down stream muons.**
- **Contribution to the observed resolution.**

- **Up and down stream RSSC performance for pions**



- **Little difference bewteen up and down stream pions.**