Angular Dispersion with BT Gamma data Update

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Event classification

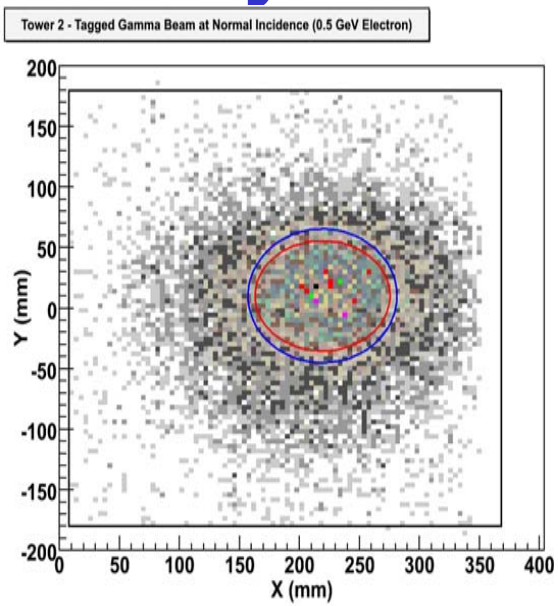
Score

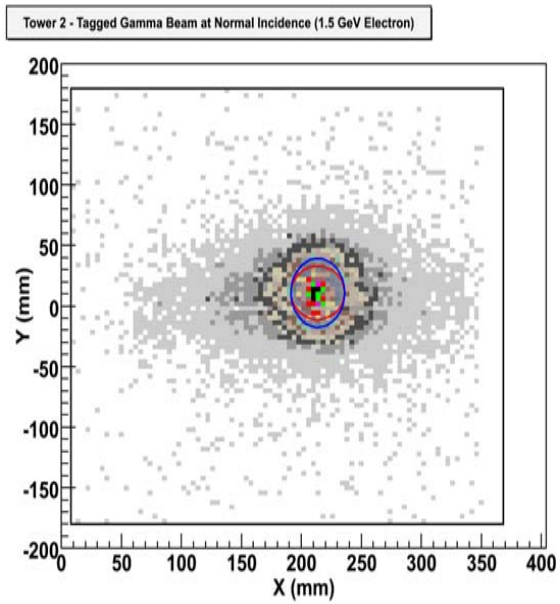
- Class A: events with 1 vertex
  - Class A.1: events with 2 tracks
    - Class A.1.1: CalCsIRLn > 6
      - Class A.1.1.1: First two top TKR plane as Veto New
  - Class A.2: events with 1 track
    - Class A.2.1: CalCsIRLn > 6
      - Class A.2.1.1: First two top TKR plane as Veto New

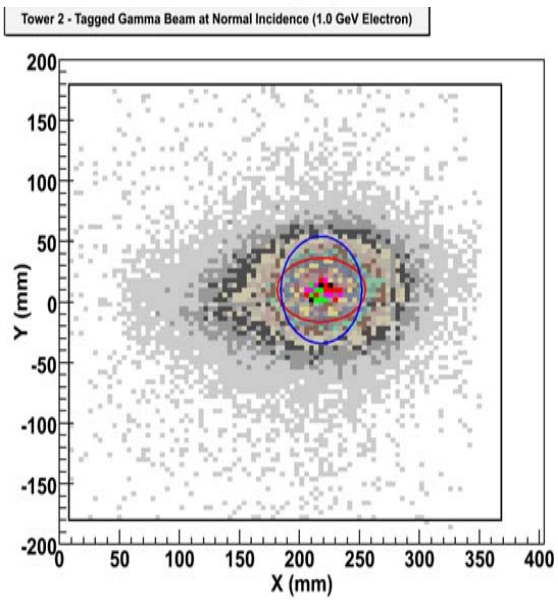
Score

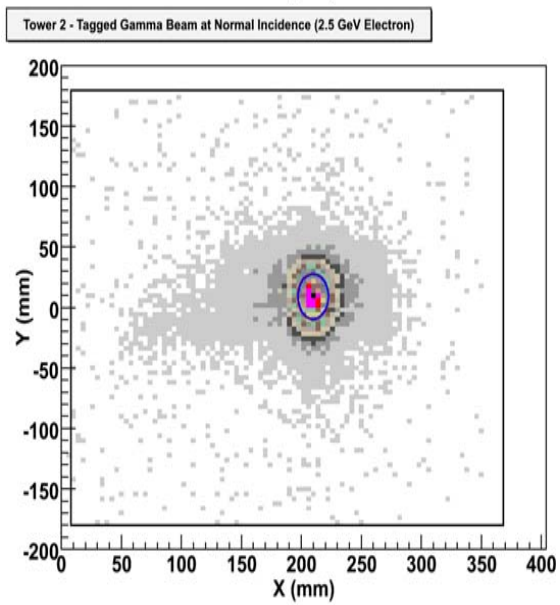
The CU has been used as standalone detector
Level 0 Cut: CalEnergyRaw > 0

Systematic due to Beam dispersion



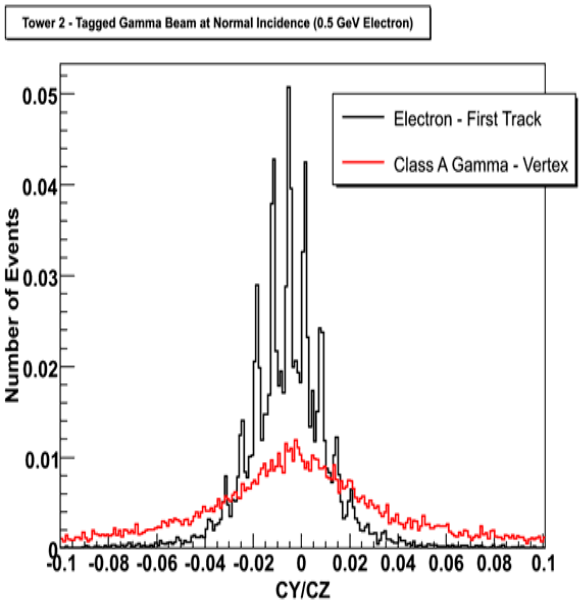


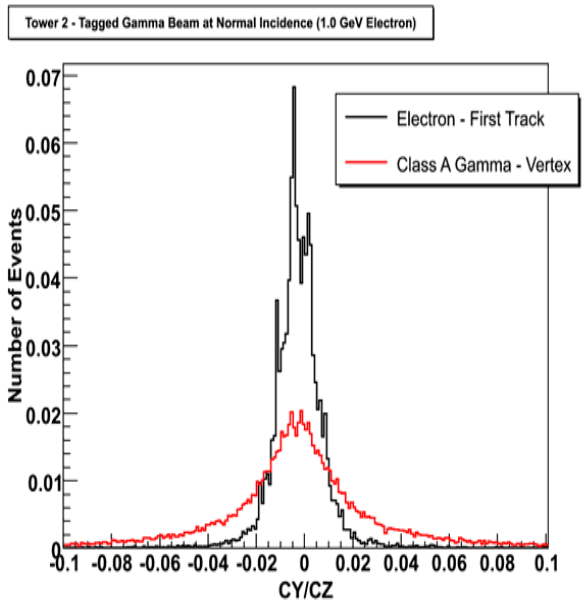


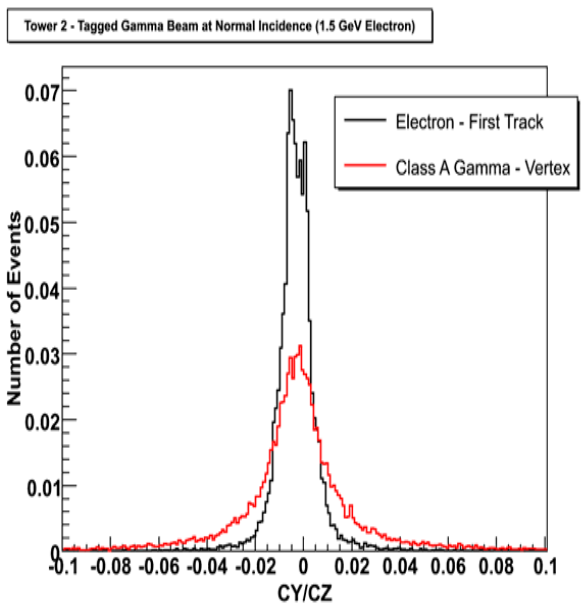


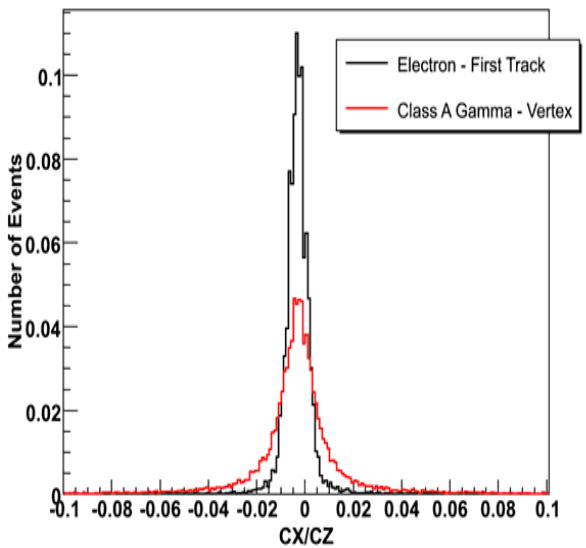
- **Blue ellipse: electron beam spot at 1 sigma**
- **Red ellipse: Class A gamma vertices spot at 1 sigma**
- **The beam divergence increase as the electron momentum decreases.**
- **The systematic error due to beam dispersion is energy dependent**

Beam dispersion









Electron data

- **0.5 GeV: 14 mrad**
- **1.0 GeV: 9 mrad**
- **1.5 GeV: 7 mrad**
- **2.5 GeV: 4 mrad**

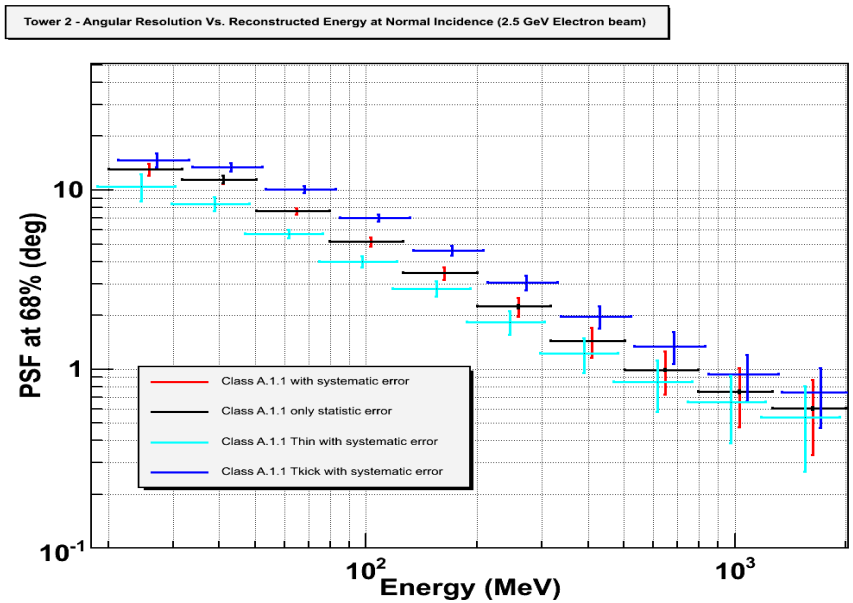
PSF systematic is:

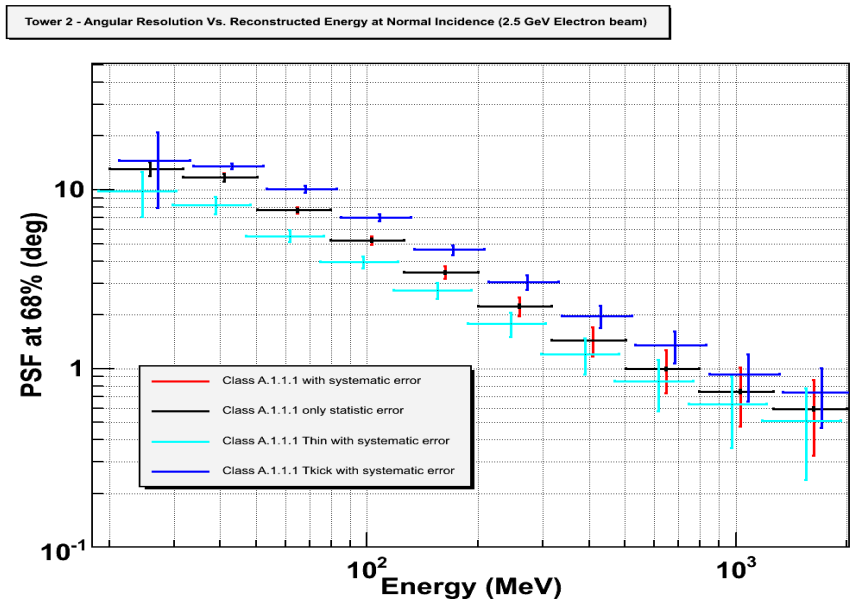
- **0.23 deg for 2.5 GeV electron beam (Full brems)**
- **0.40 deg for 1.5 GeV electron beam**
- **0.52 deg for 1.0 GeV electron beam**
- **0.80 deg for 0.5 GeV electron beam**

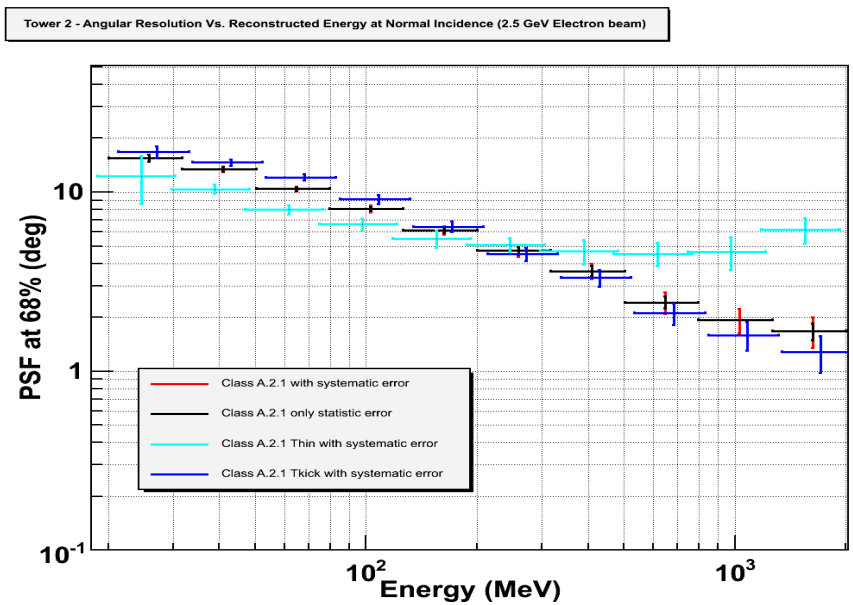
Configurations

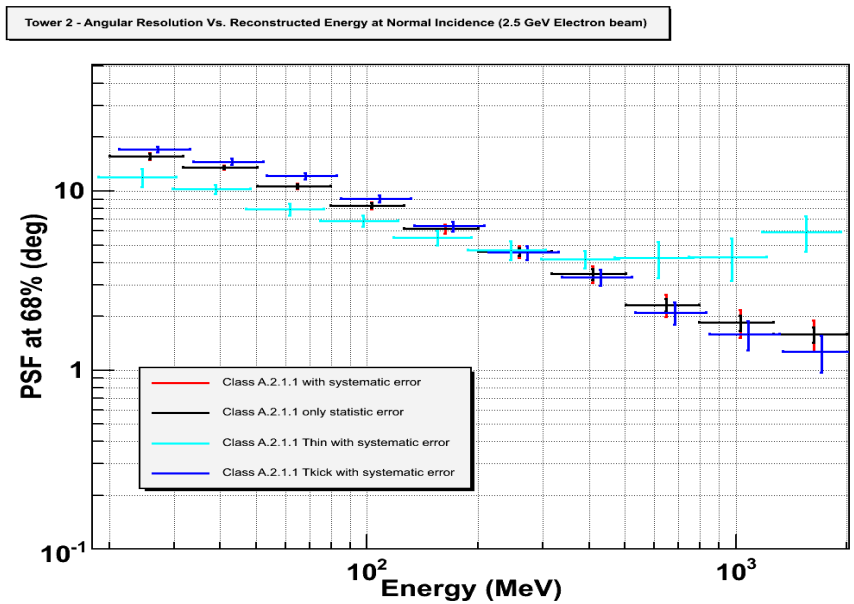
- **Normal incidence**
  - **Tower 2: all gamma runs (both full brems. and tagged) have been used at 0° with 2.5 GeV electron beam. The pion contamination has been rejected by requiring the X Vertex position in Tower 2 (VtxX < 350.)**
  - **Tower 3: all gamma runs (both full brems. and tagged) have been used at 0° with 2.5 GeV electron beam**
- **30°: all gamma runs (both full brems. and tagged) have been used at 30° with 2.5 GeV electron beam**
- **48°: all gamma runs (both full brems. and tagged) have been used at 50° with 2.5 GeV electron beam**
- **MC at normal incidence on Tower 3 with 2.5 GeV electron beam**

PSF at 68% - Tower 2 at 0 Deg

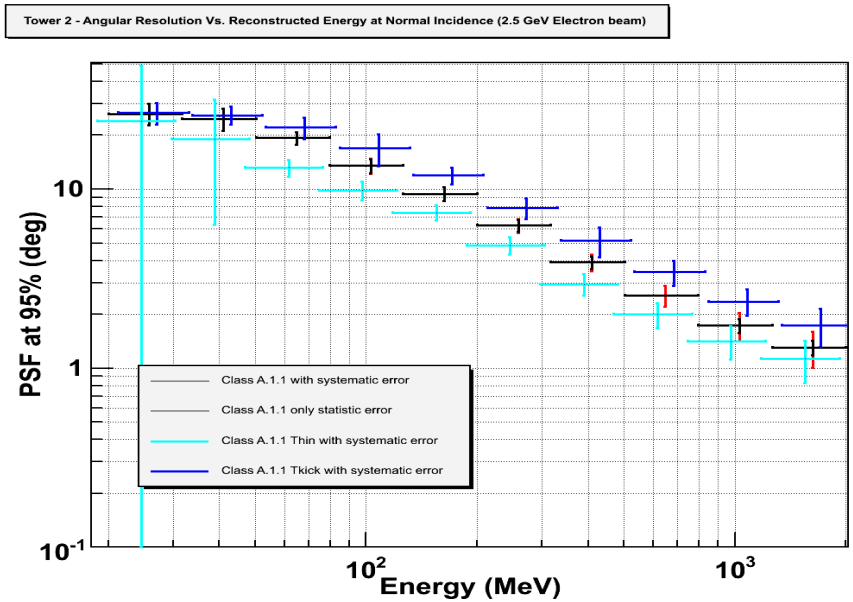


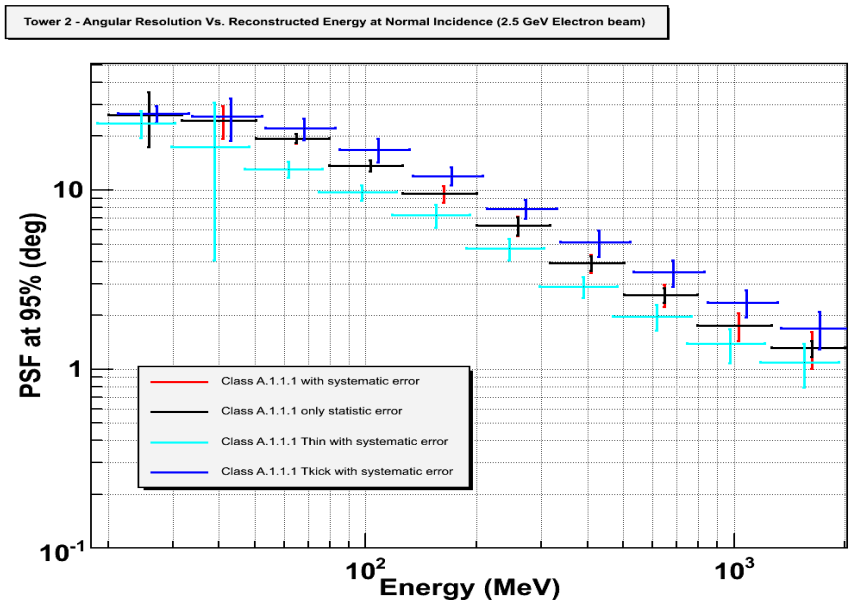


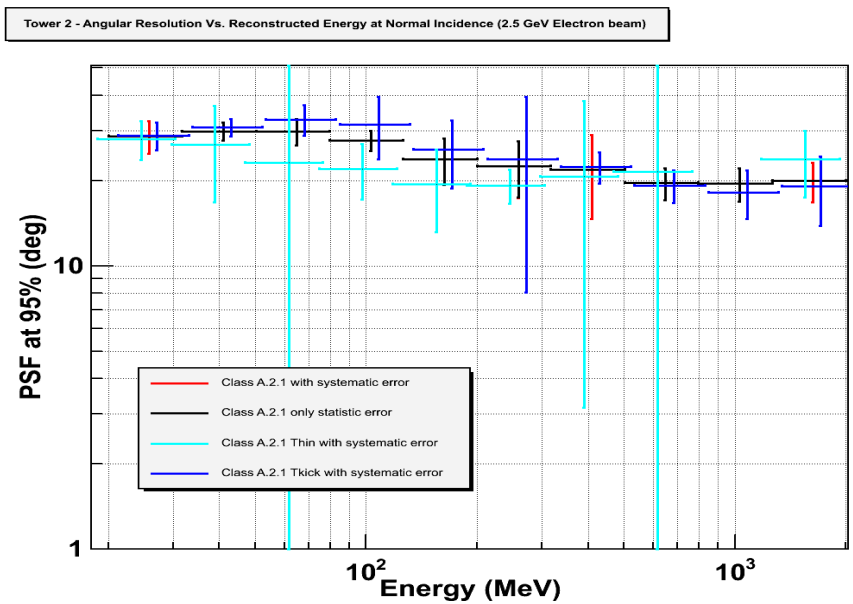


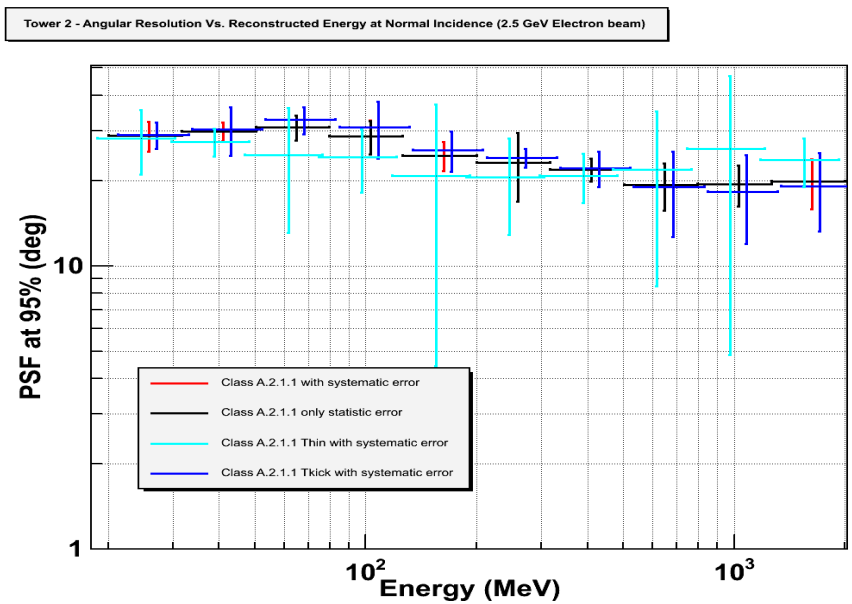


PSF at 95% - Tower 2 at 0 Deg

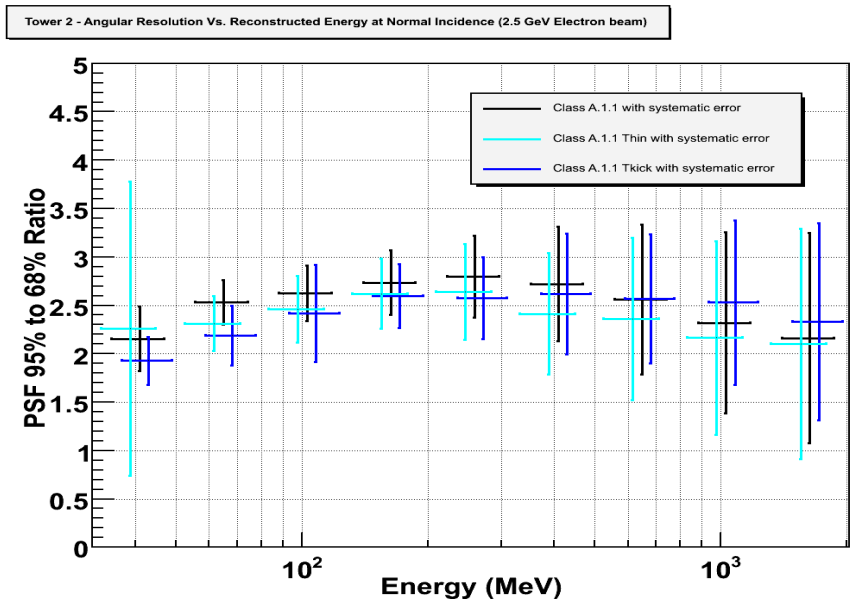


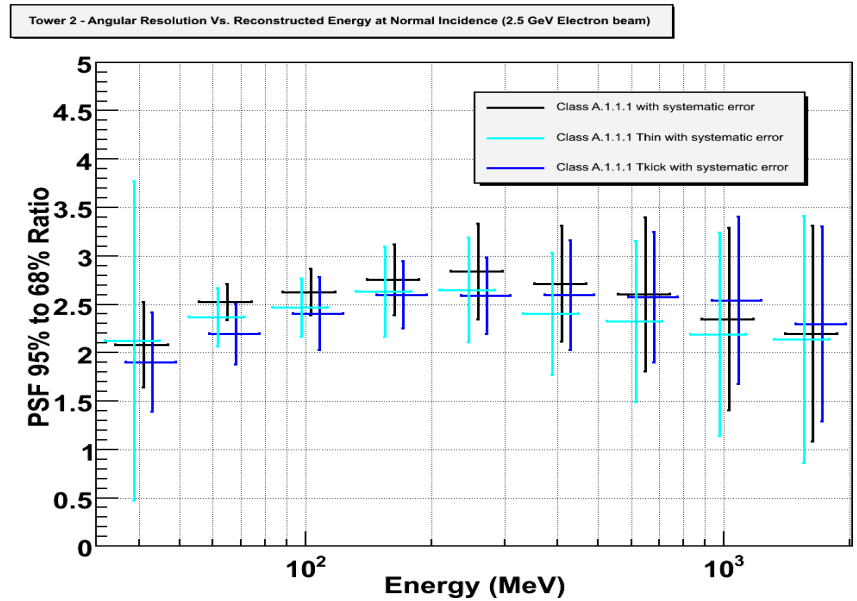


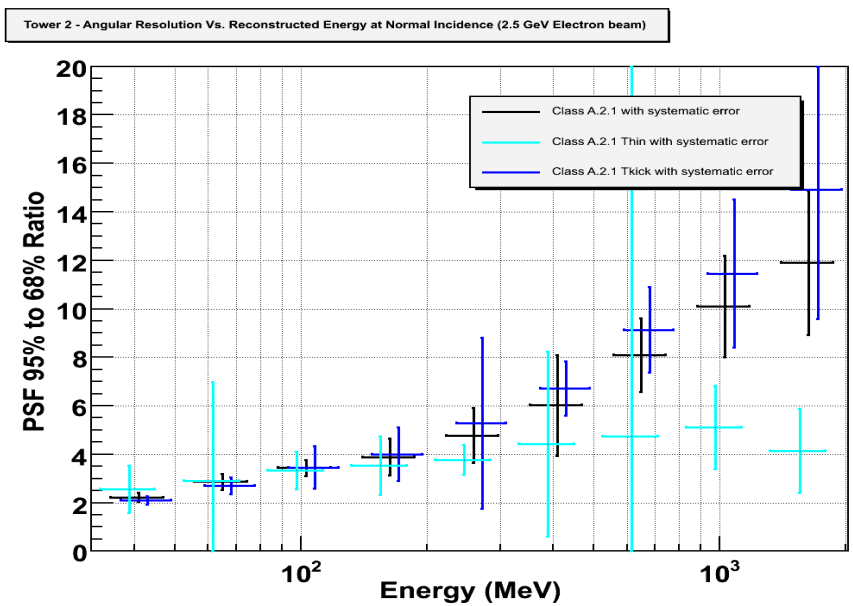


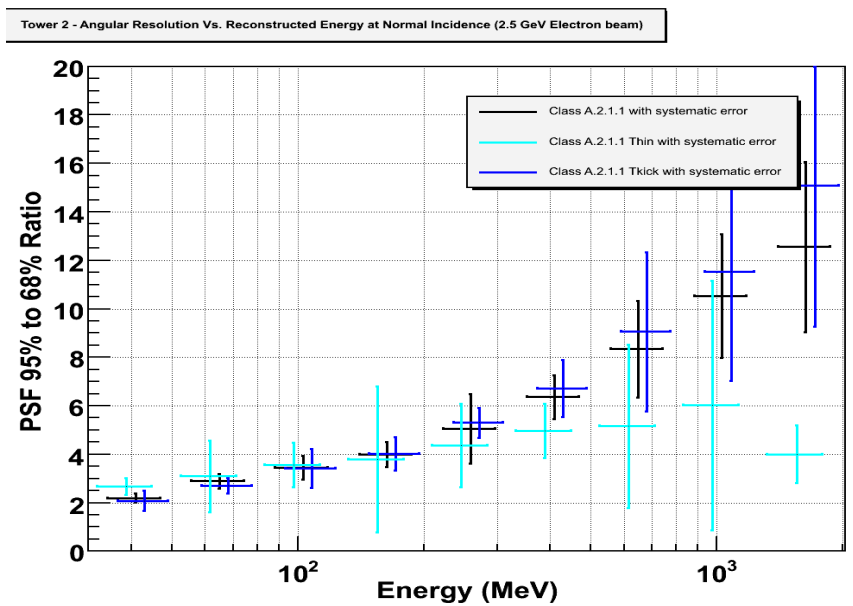


PSF 95% to 68% ratio – Tower 2 at 0 Deg

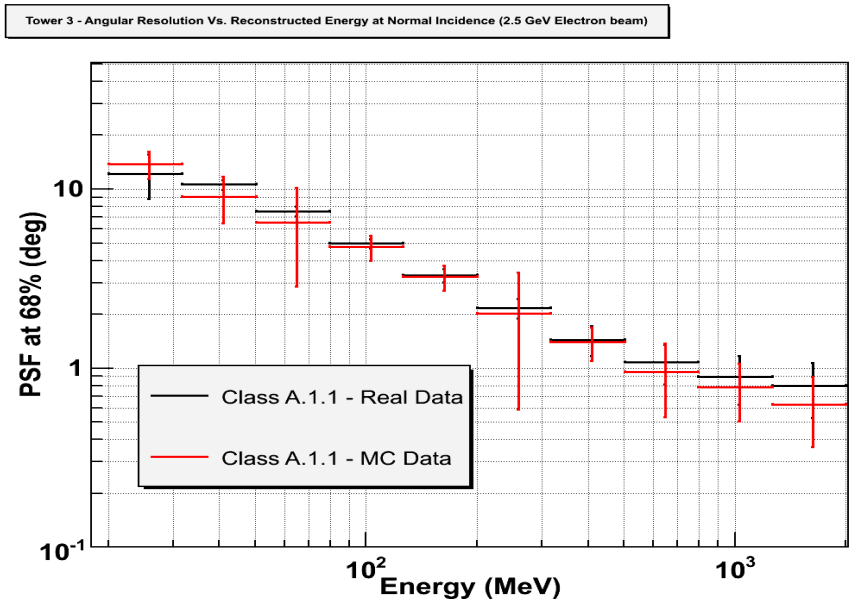


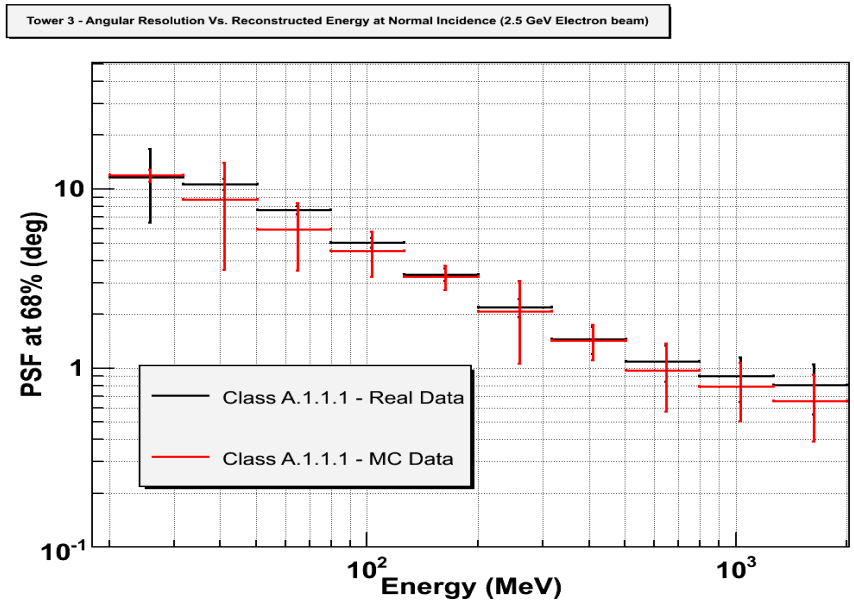


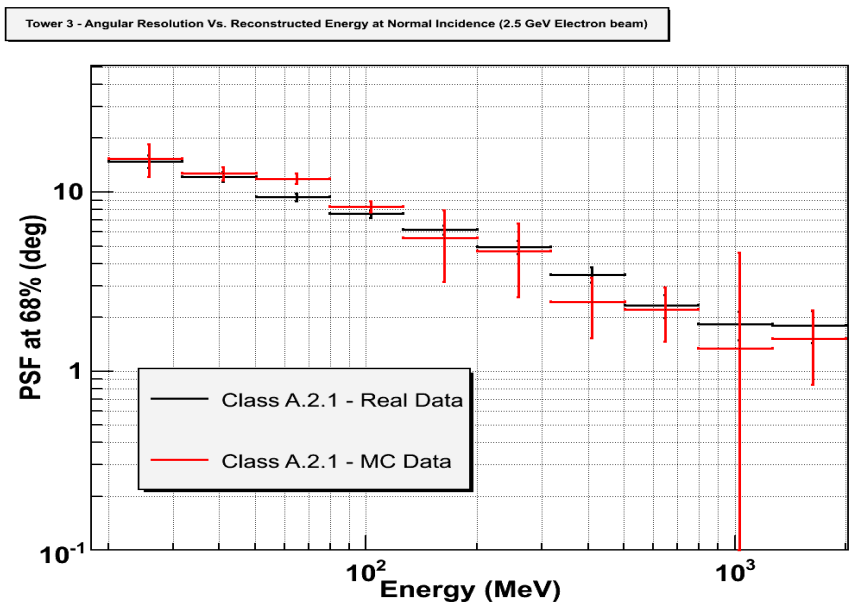


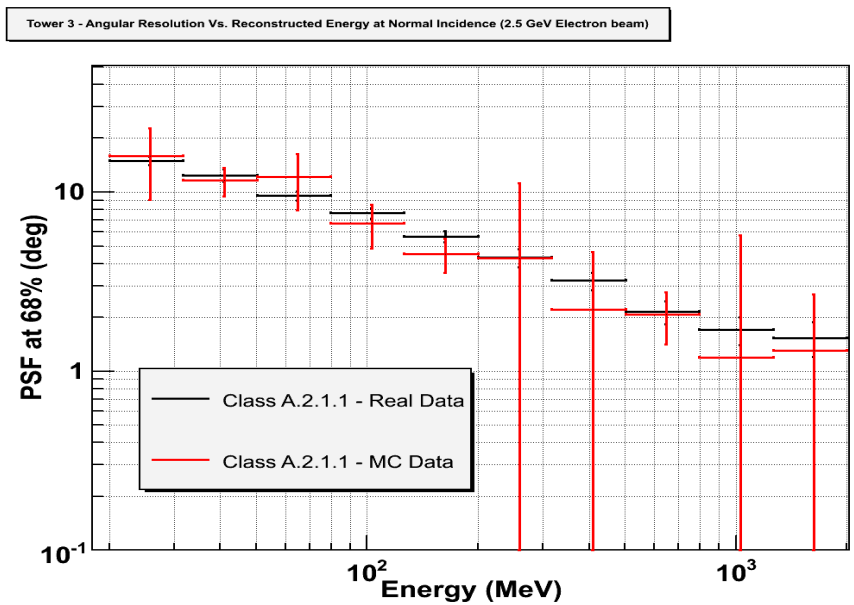


Tower 3 Data-MC at 0 deg: PSF 68%

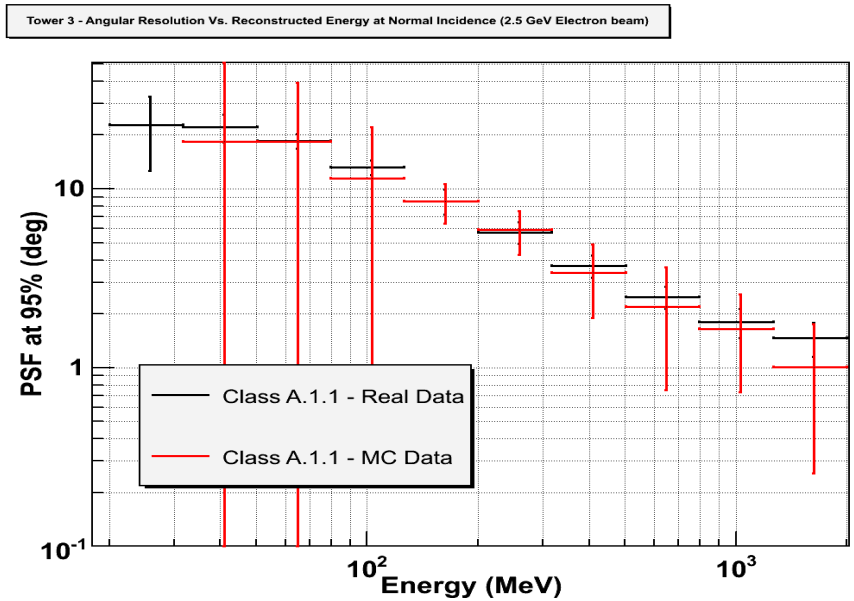


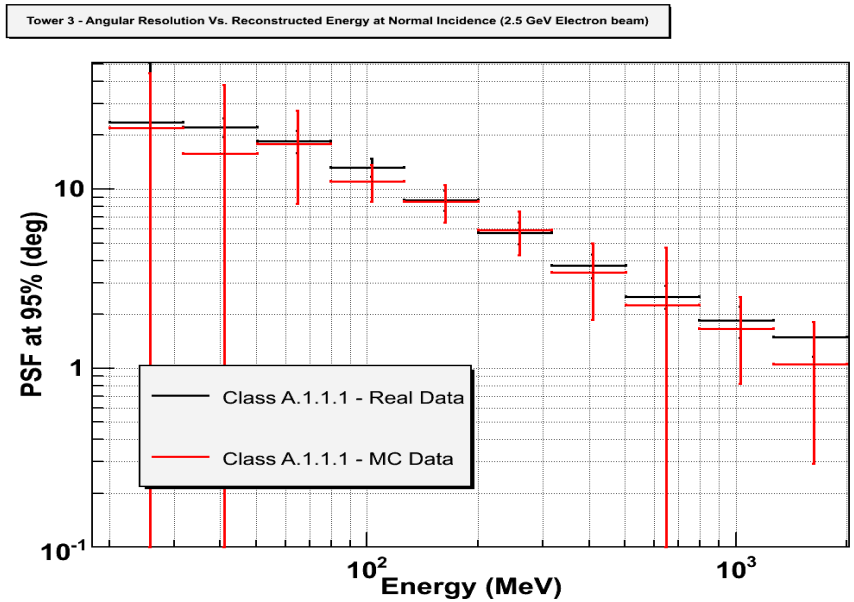


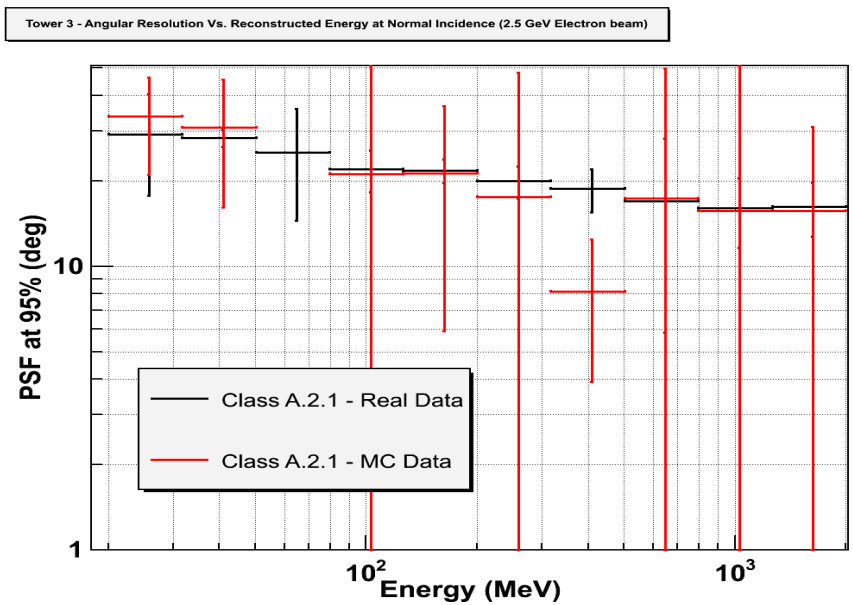


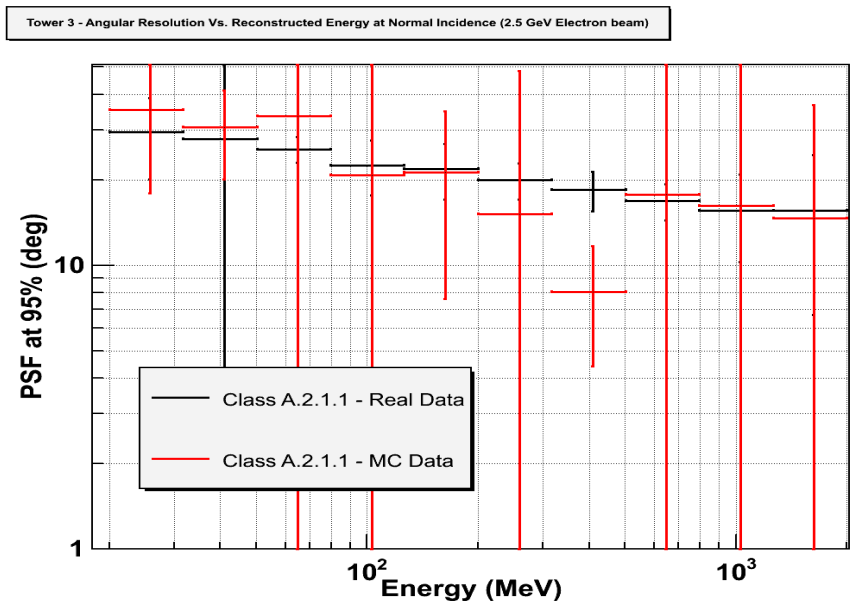


Tower 3 Data-MC at 0 deg: PSF 95%

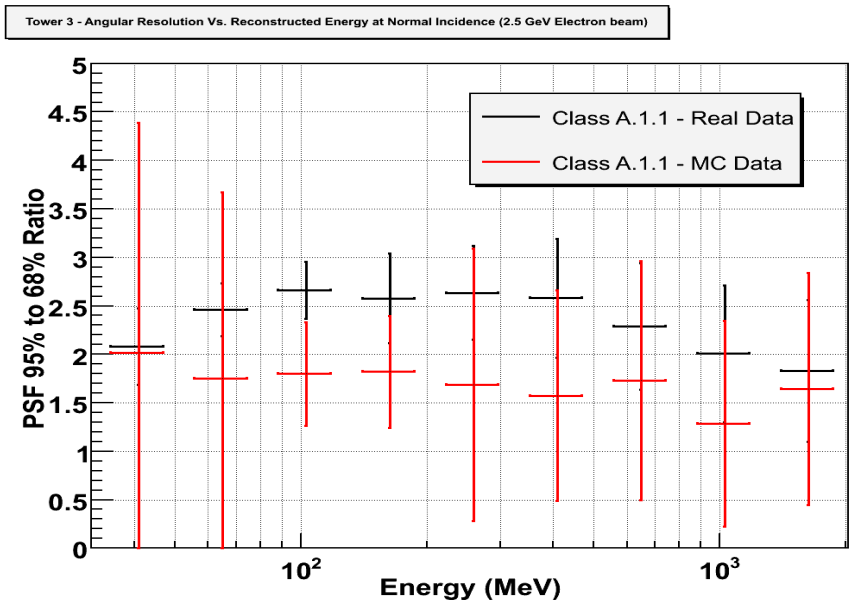


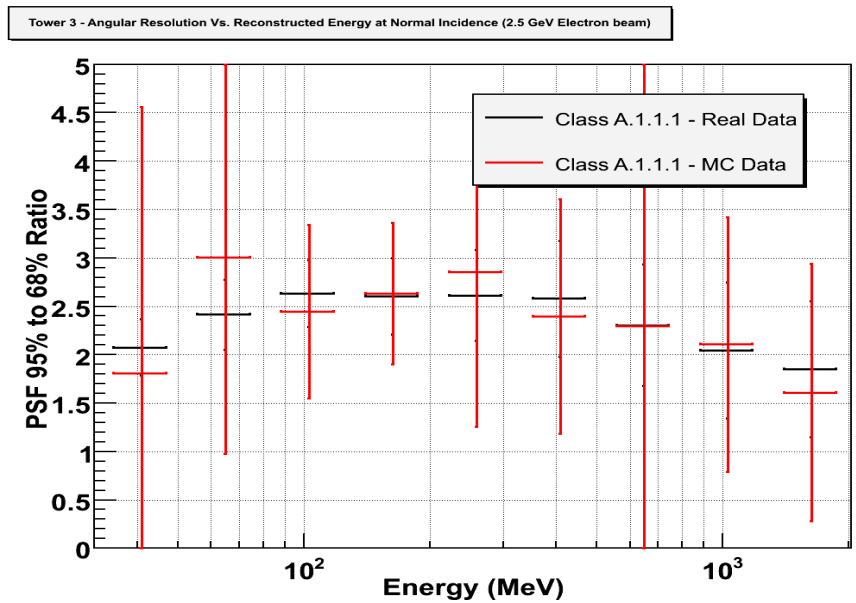


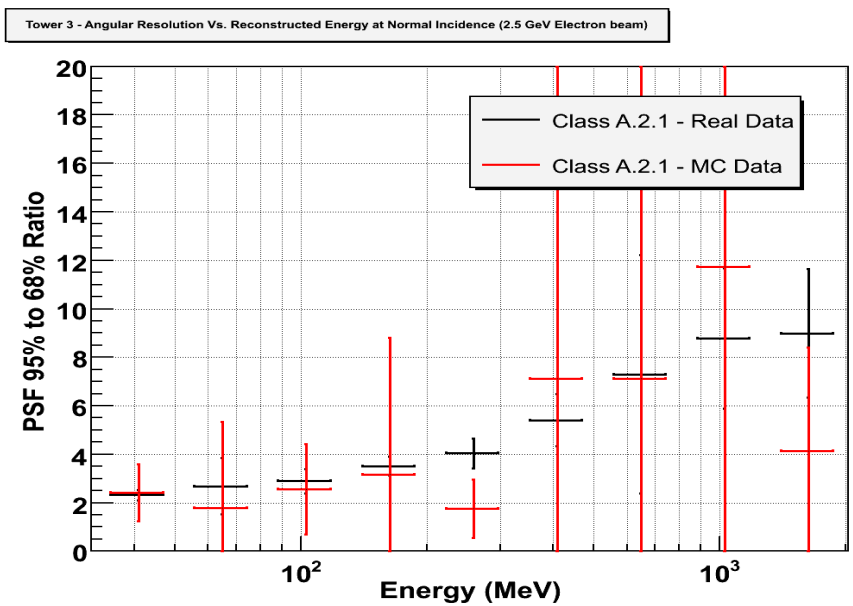


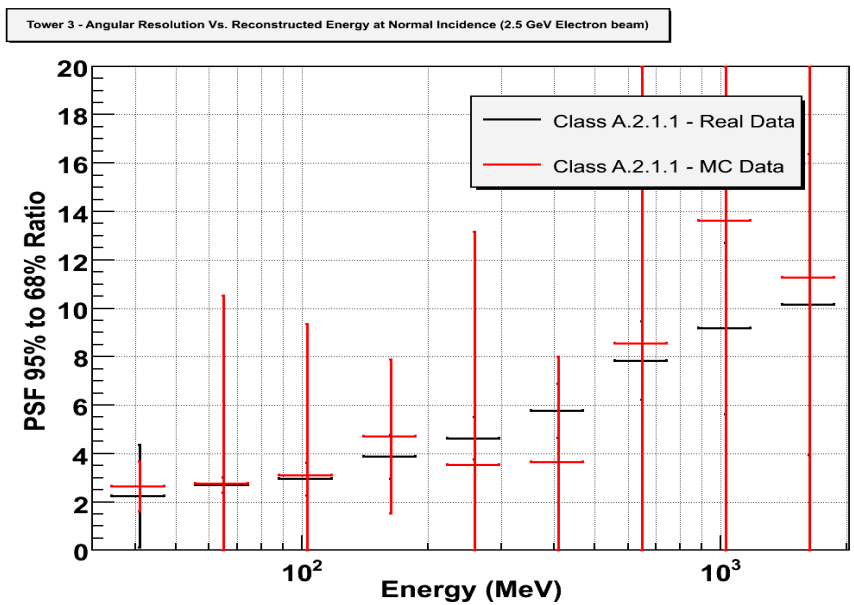


Tower 3 Data-MC 0deg: PSF 95% to 68% Ratio









Conclusion

- Despite the MC sample is poor and even though there is a disagreement in TKR hit distribution, the MC PSF behavior reproduces data.