Simulation comparison

Aleksei Dziuba / PNPI

21st of April 2021

AMBER-PRM Meeting

Standalone Monte-Carlo and TGeant-based one

- TGeant-based simulations (see Matrin's slides)

- Standalone: https://github.com/aleksha/prm
  - Same app for PRES, AMBER, AMBER-PILOT
  - Beam from *the beamfile*
  - Elastic events from *ESEPP generator* *(T$_R$ = 1,4 – 1,6 MeV)*
  - *Geant4* for transport
  - *Electronic noise* from the data
  - **IsSignal condition**: 10 channels with 2% higher wrt baseline at FADC event
  - **Start and end of signal** from the slopes
  - **Energy**: sum of above-of-baslene between start and end of signal
  - **Total energy**: sum for anodes with IsSignal

- Attempt to compare beam noise

Calibration issue (example for 0,5 MHz beam)
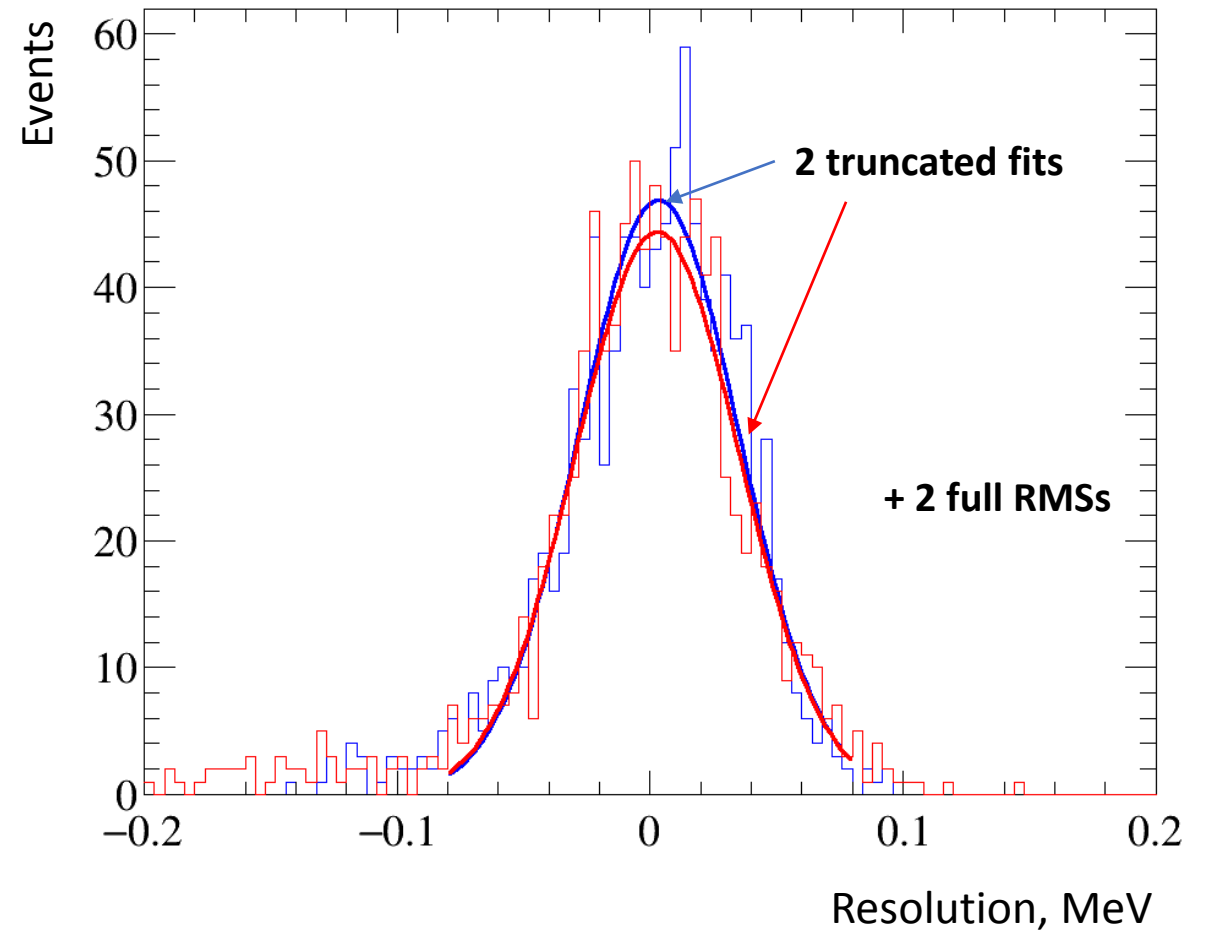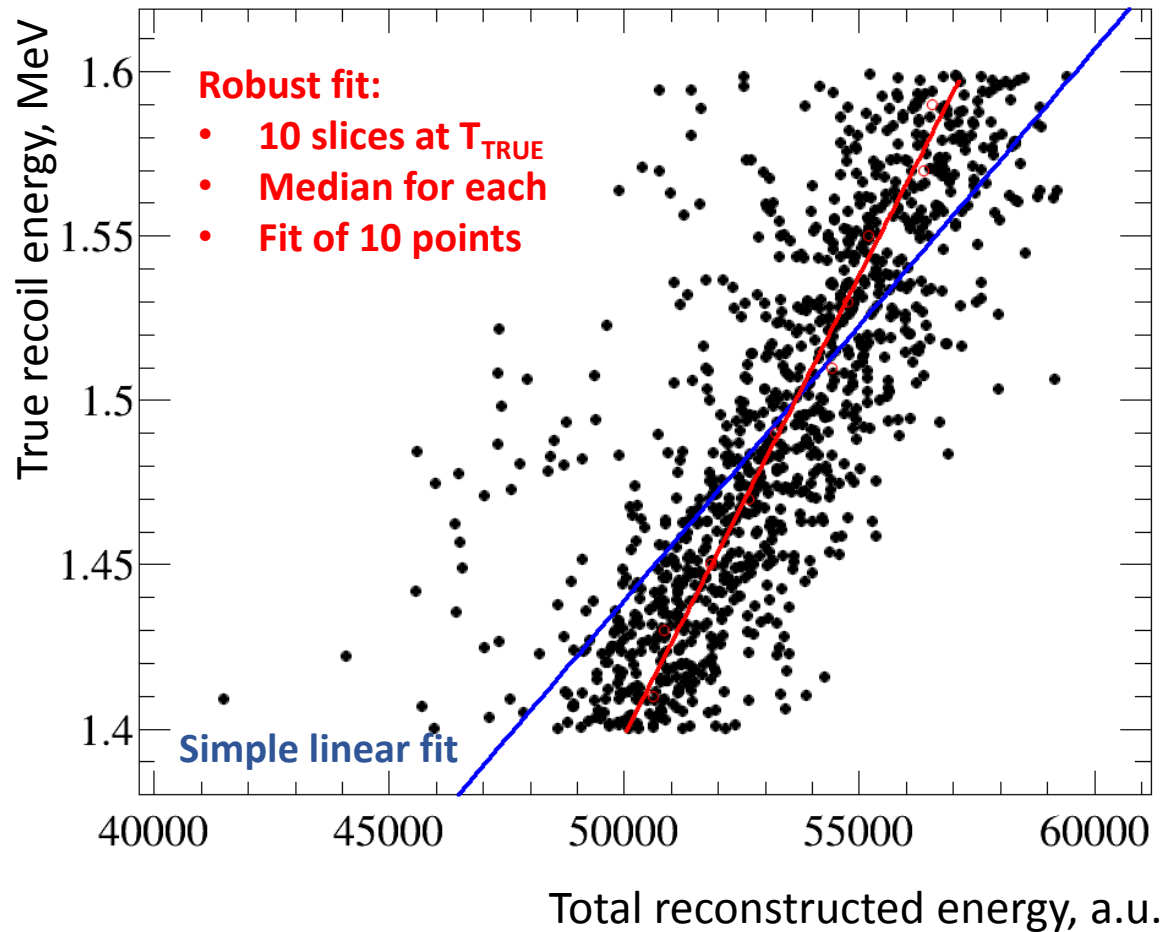
Results and comparison
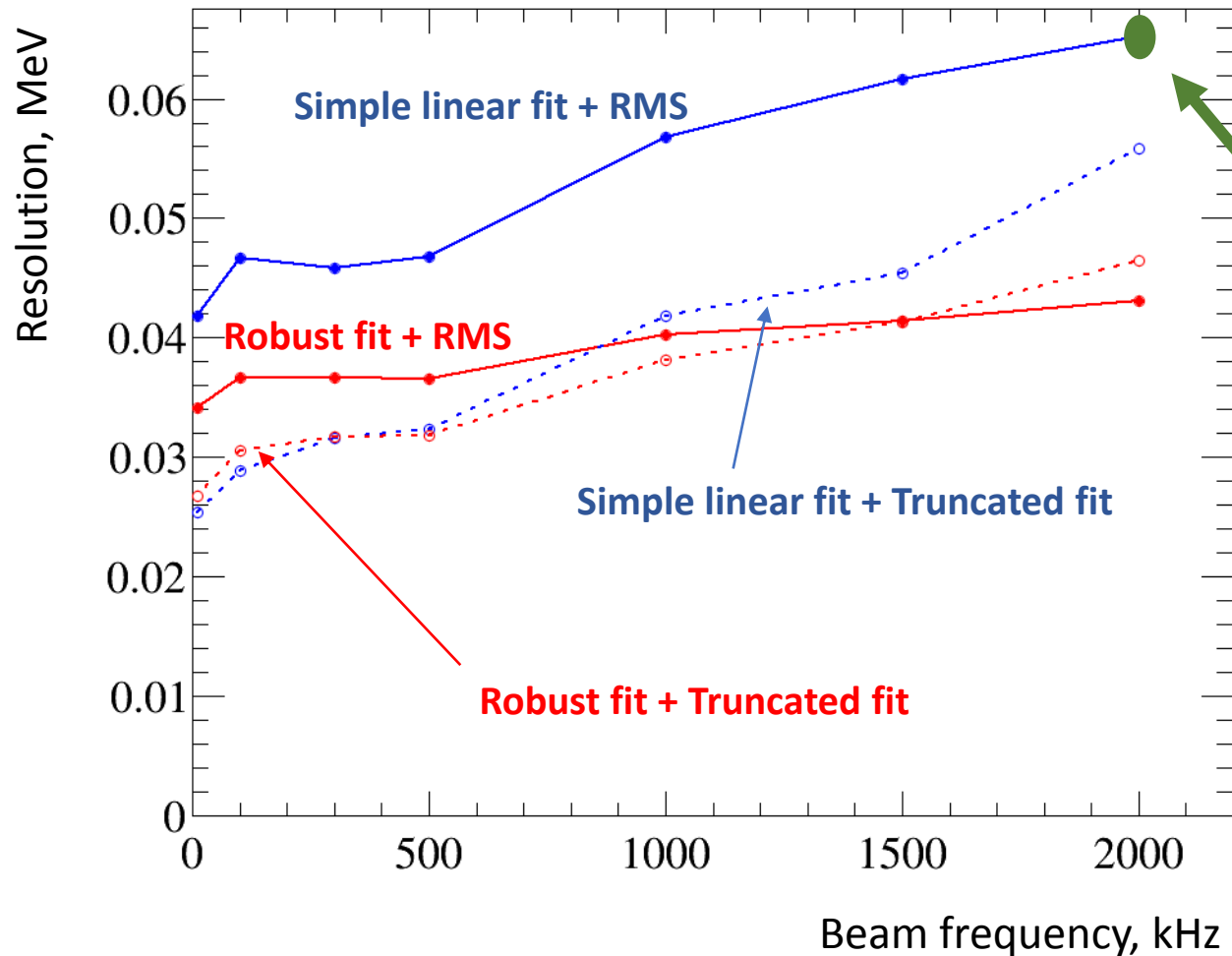
- Calibration matters!
- Simple linear fit + RMS to be compared with TGeant-based predictions
  - 65.0 ± 1.5 keV (with an energy bias)
  - 64.8 ± 1.4 keV (with more included muon hits)
- Nice agreement