

# A first look at electromagnetic events from the 2009 FNAL standalone period using bigtree data

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- 1 Disclaimer
- 2 Simple noise correction
- 3 Electromagnetic events from the 2009 FNAL standalone period

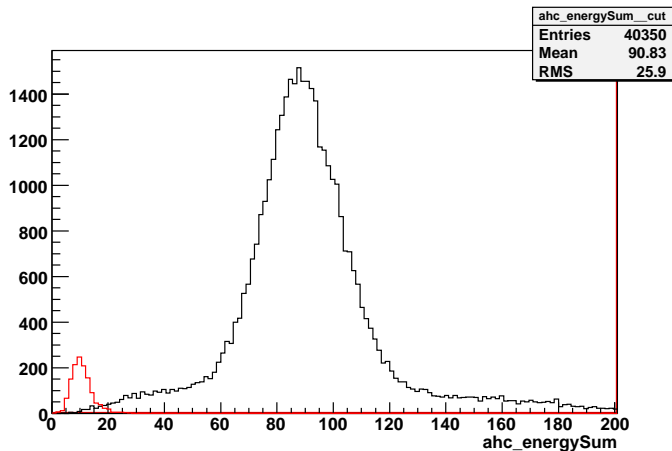
- I don't have much overview yet
- All analysis here was done using bigtree data
- No calibration accounting for temperature differences
- Don't take anything in here too serious
- If you have remarks or I misrepresent anything, please interrupt

- FNAL  $e^-$  runs:  
580085, 580087, 580090, 580092, 580093, 580154
- CERN  $e^+$  runs:  
350110, 350113, 350114, 350117, 350118, 350128, 350132
- cuts:
  - beamBit (beam events)  
or pedestalBit && !calibBit && !spillBit (noise events)
  - tcm\_energySum < 12.0 (filter out muons)
  - emc\_energySum > 30.0 && emc\_energySum < 60.0 (for hadron runs only)

# Noise correction — Why?

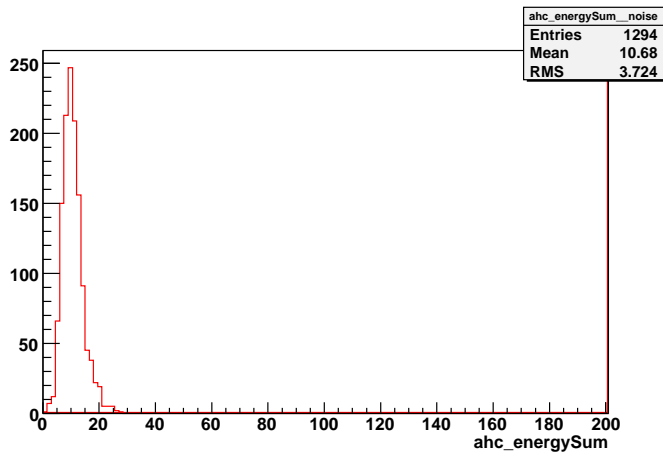
- noise causes offset
- noise may be different for each run (temperature dependence)
- thus: compensate for each run separately
- rather small effect
- run by run corrections only — no accounting for temperature dependence of electronics response
- sample plots on the following slides from run 580093 (FNAL, 2 GeV electrons)

# Without noise correction



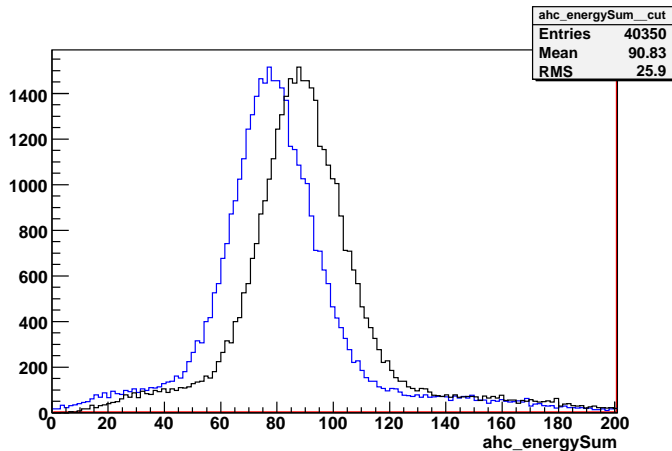
- part of the energy sum is due to noise

# Noise events



- noise taken from pedestal events

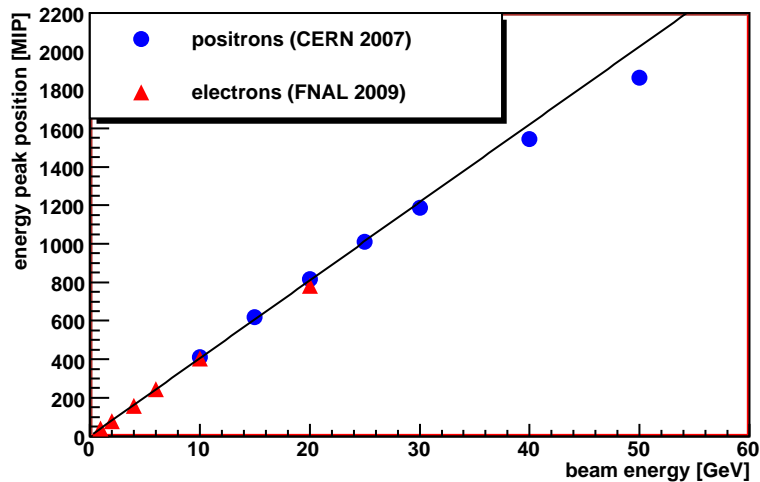
# Shifted to compensate noise



- energy sum corrected by mean noise of same run
- might improve linearity at low energies

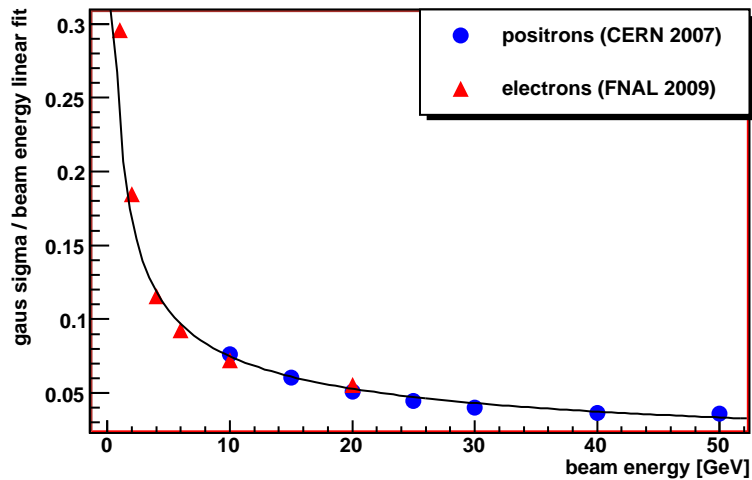


# Energy linearity



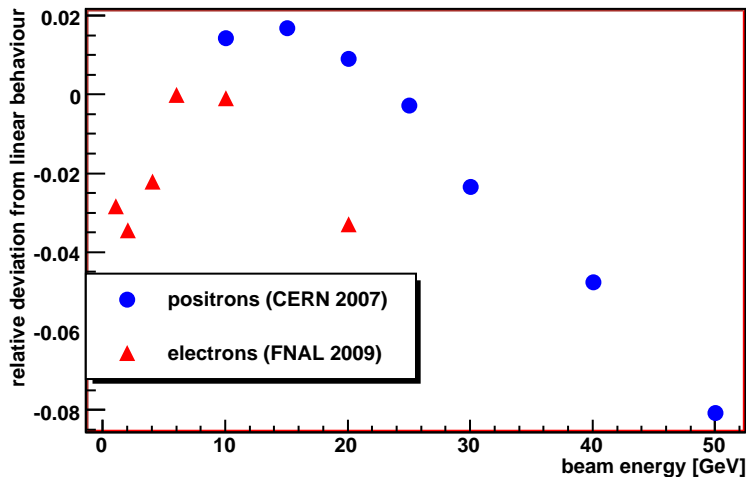
● slope:  $40.5 \frac{\text{MIP}}{\text{GeV}}$

# Energy resolution



● fit:  $\frac{0.24}{\sqrt{E}}$

# Deviation from linear behaviour



# Number of hits for FNAL and CERN data

