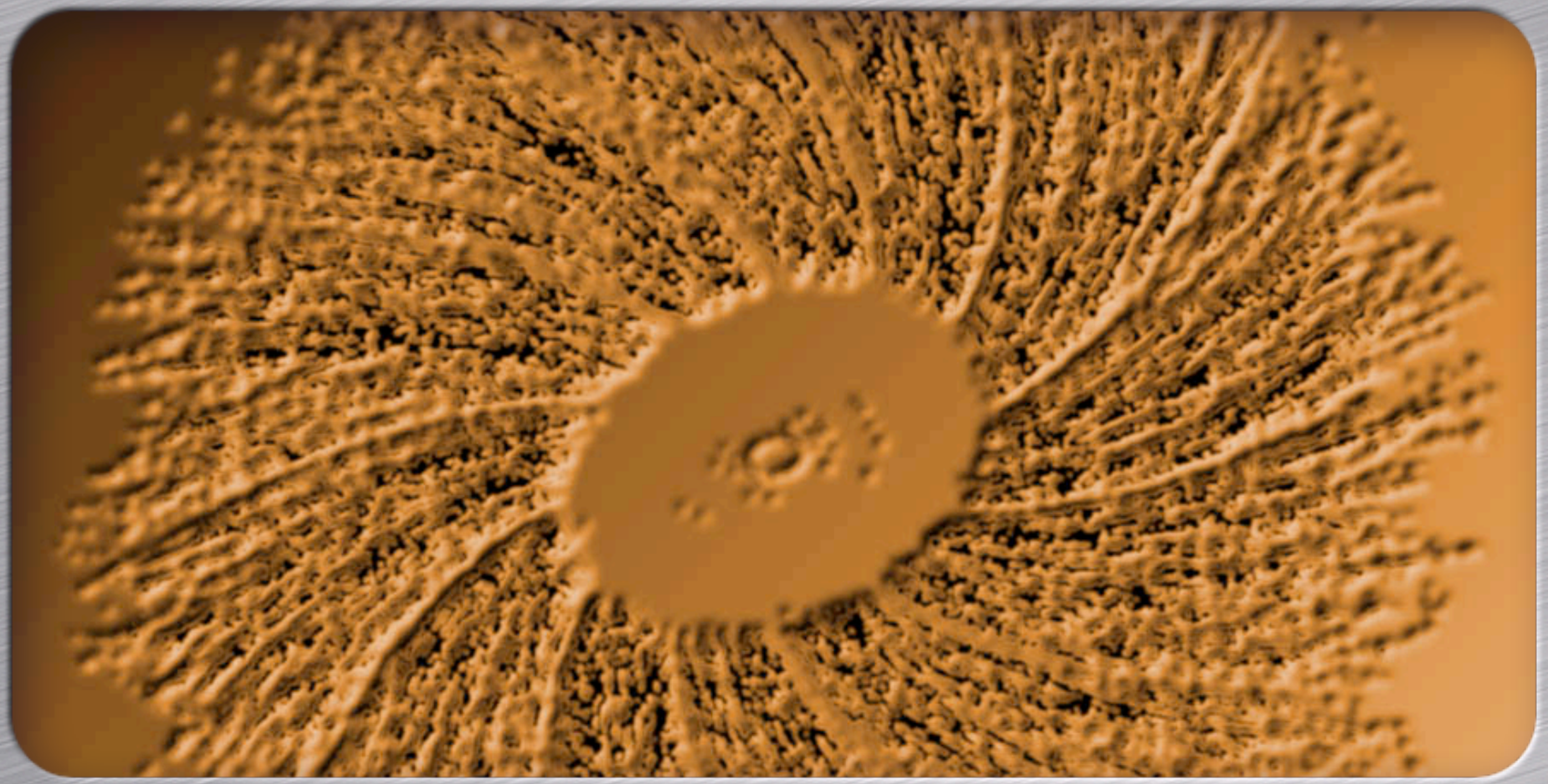
STAR Analysis Meeting
BNL - Dec. 5, 2004

Gene Van Buren
Brookhaven National Lab



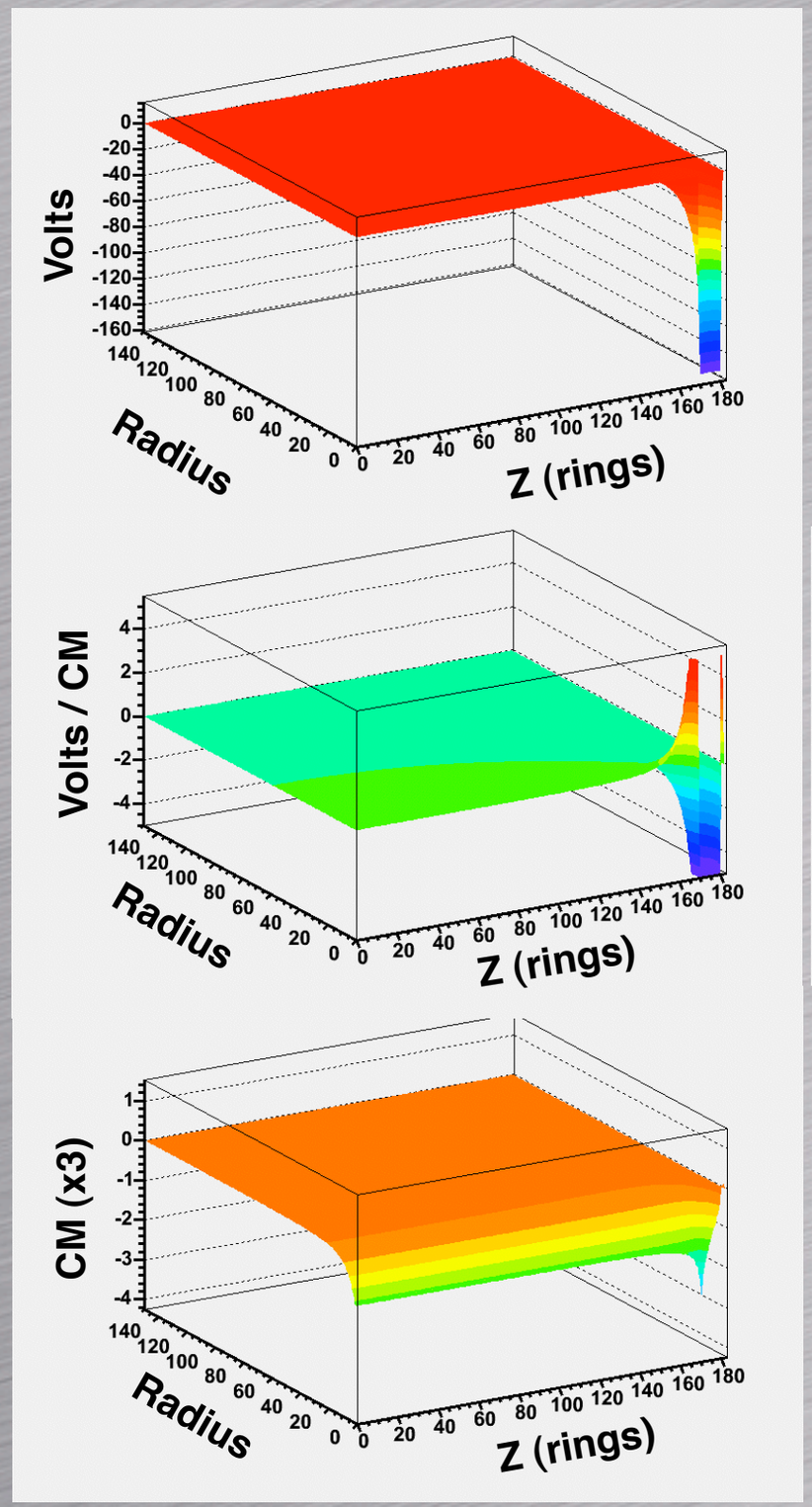
STAR Calibrations

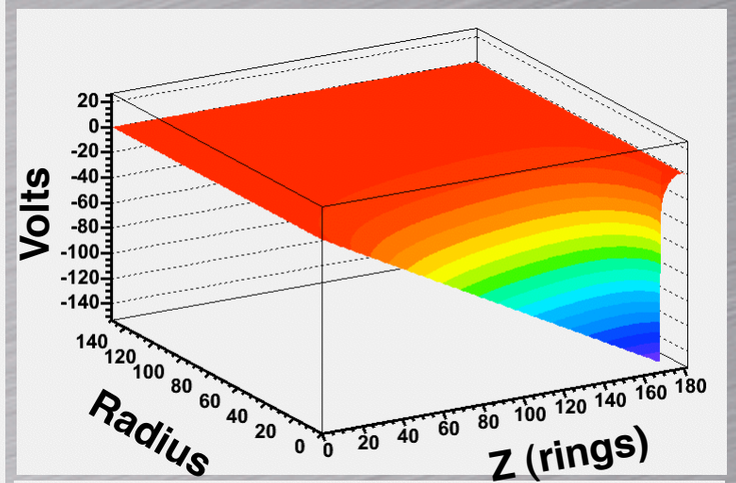
Outline

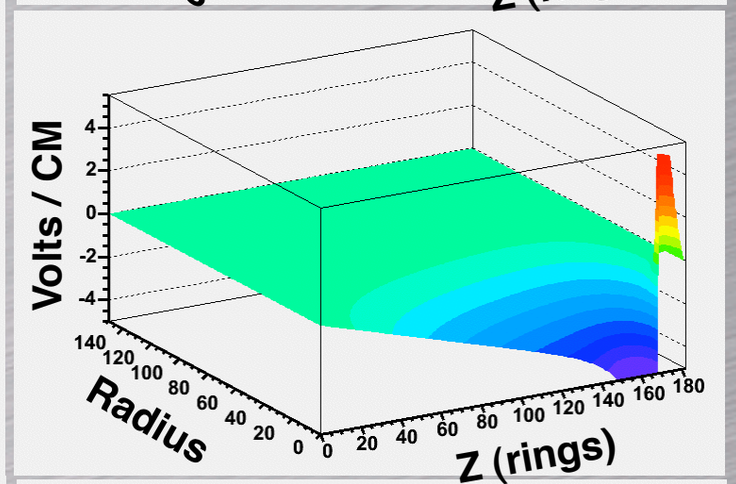
- 2004 issues
  - Everything good in current production except...
  - GridLeak
- 2005 issues
  - TPC/SVT/FTPC
  - Automation for calibs during fast offline
- other issues
  - dAu?

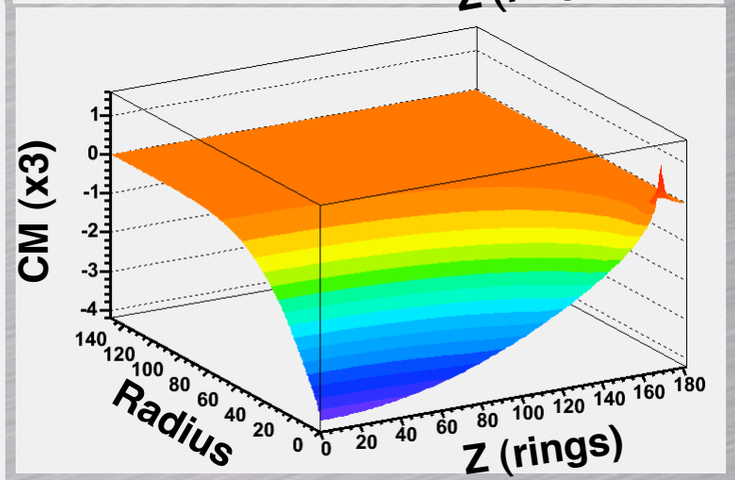
A *better* short in the IFC

- External resistor restores IFC current
- Distortions stay at small radii
- Clusters much less sensitive



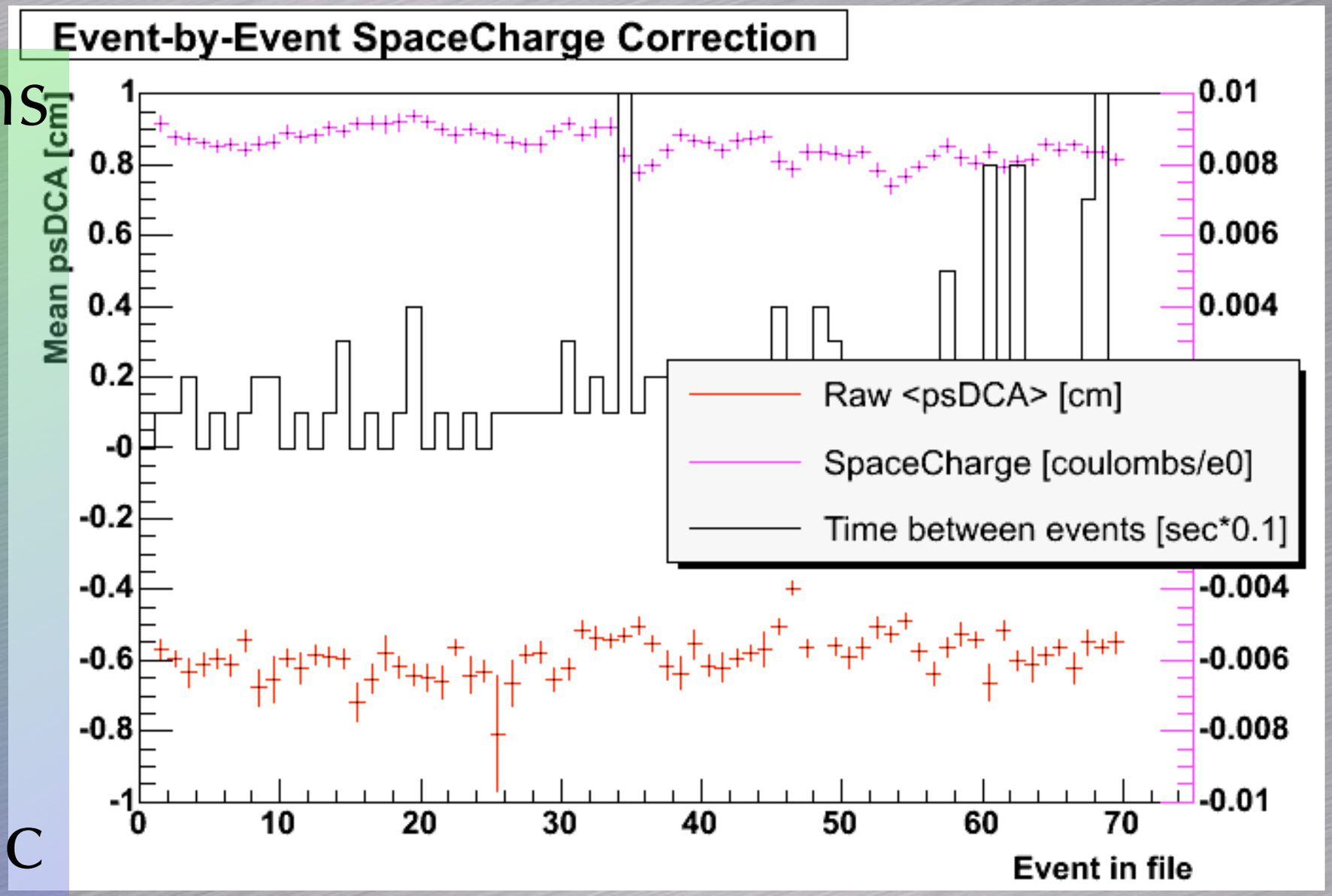






SpaceCharge: E-by-E

- Fluctuations on the seconds time scale
- E-by-E handles this, but is problematic for ‘gaps’



Run 5044026: productionHigh

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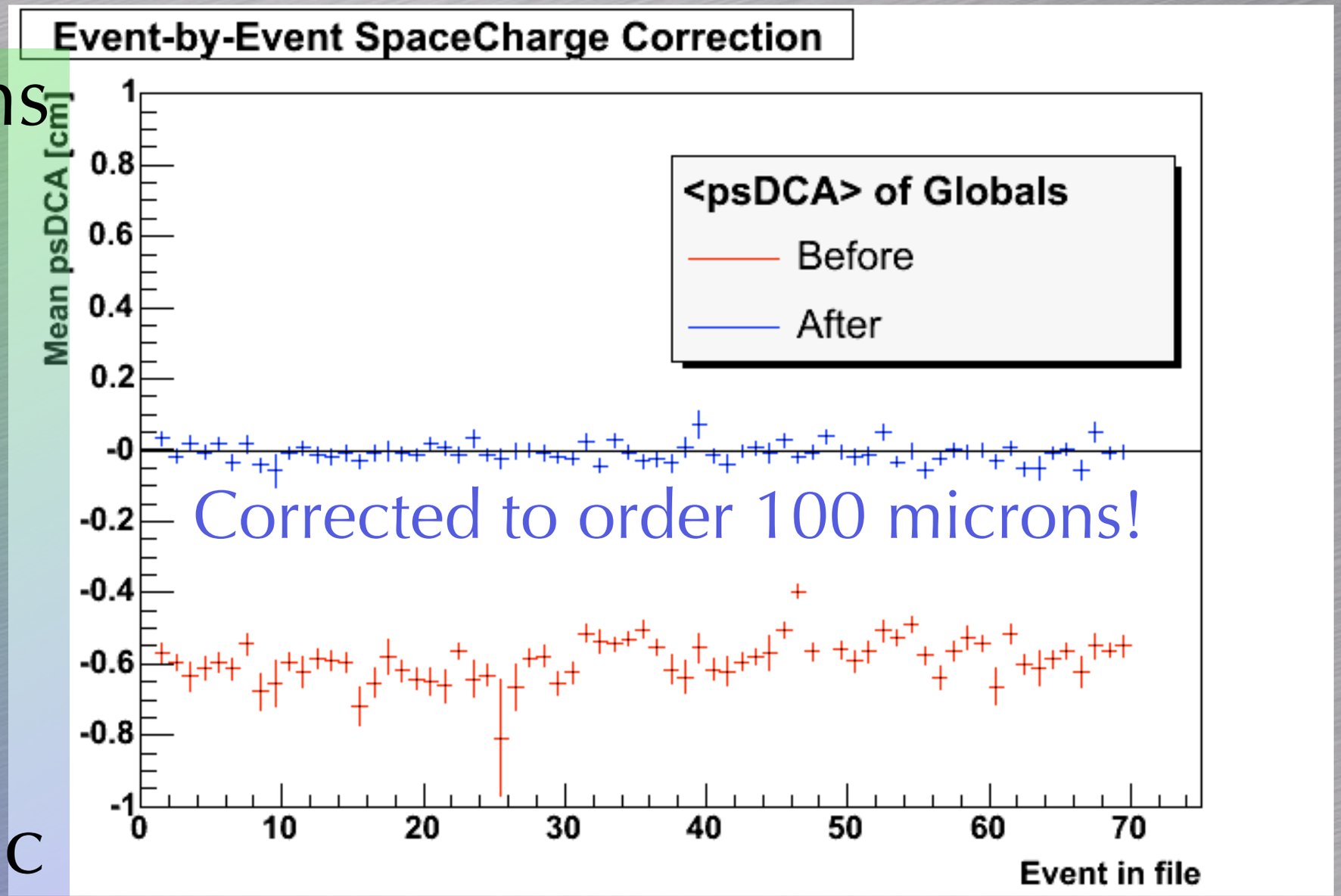
Scalers!



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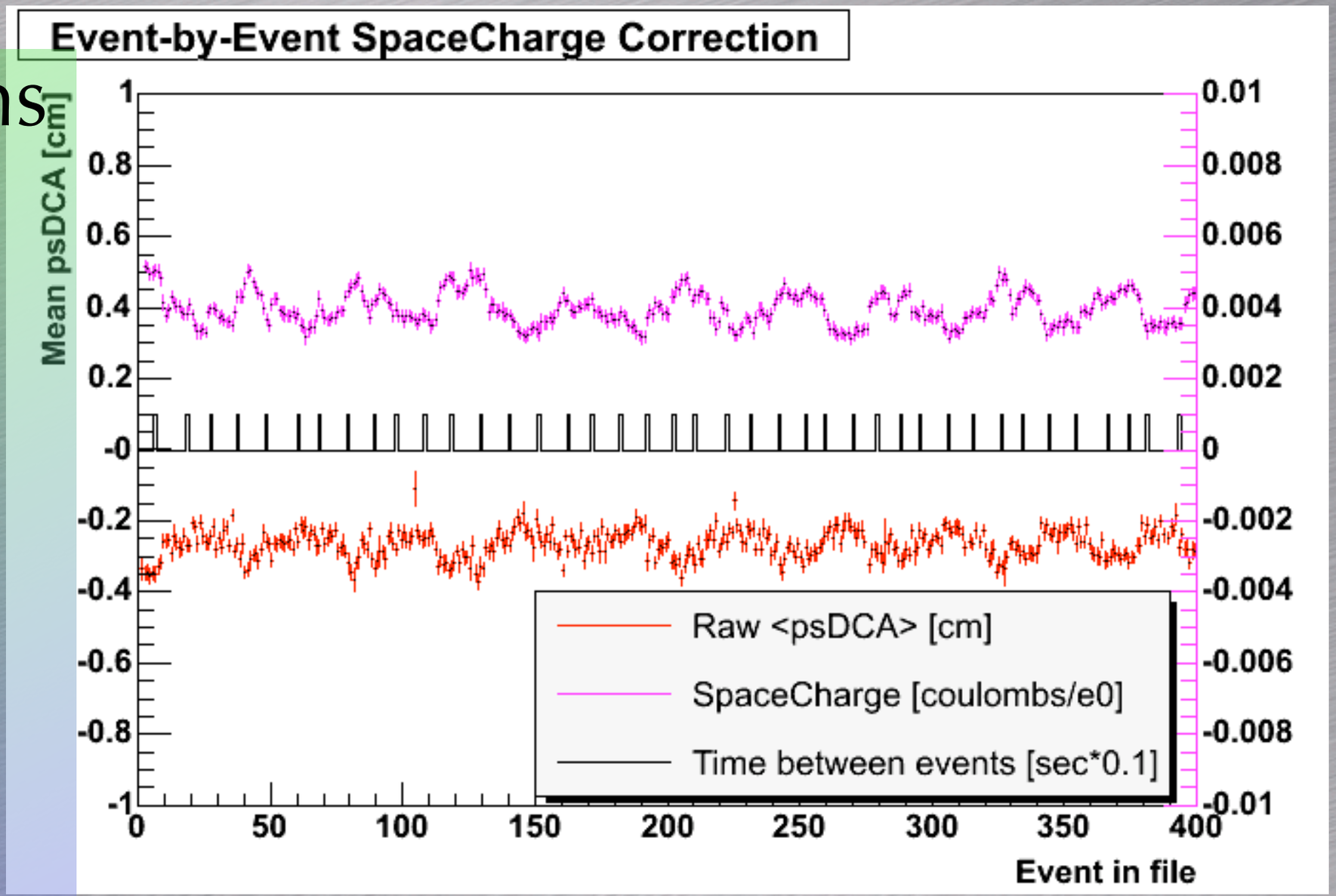
- But DAQ100 actually helps!



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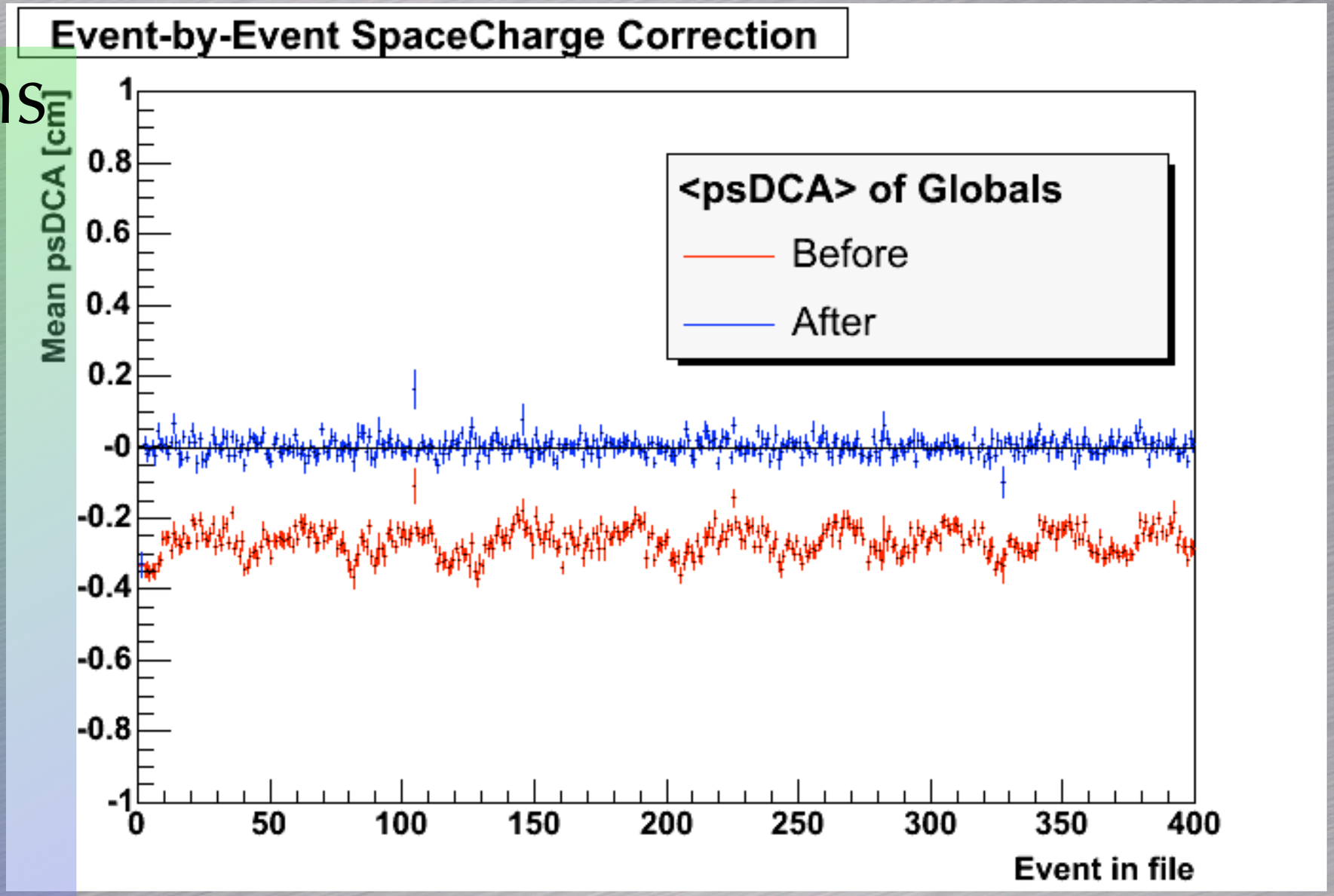
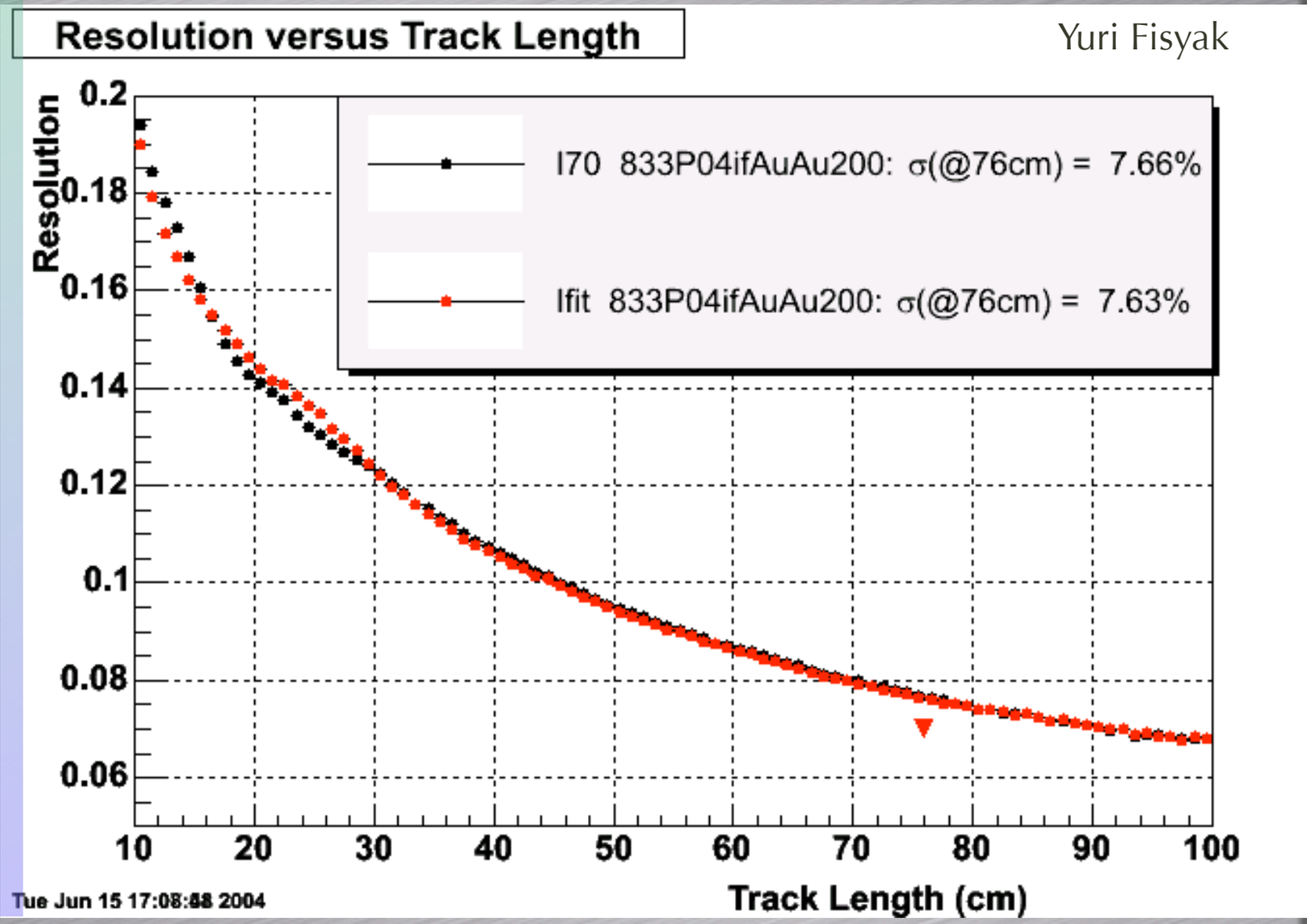


dE/dx

- Resolution getting close to design goal (7.6% vs. 7.2%)
- Appears possible to do PID in relativistic rise region!



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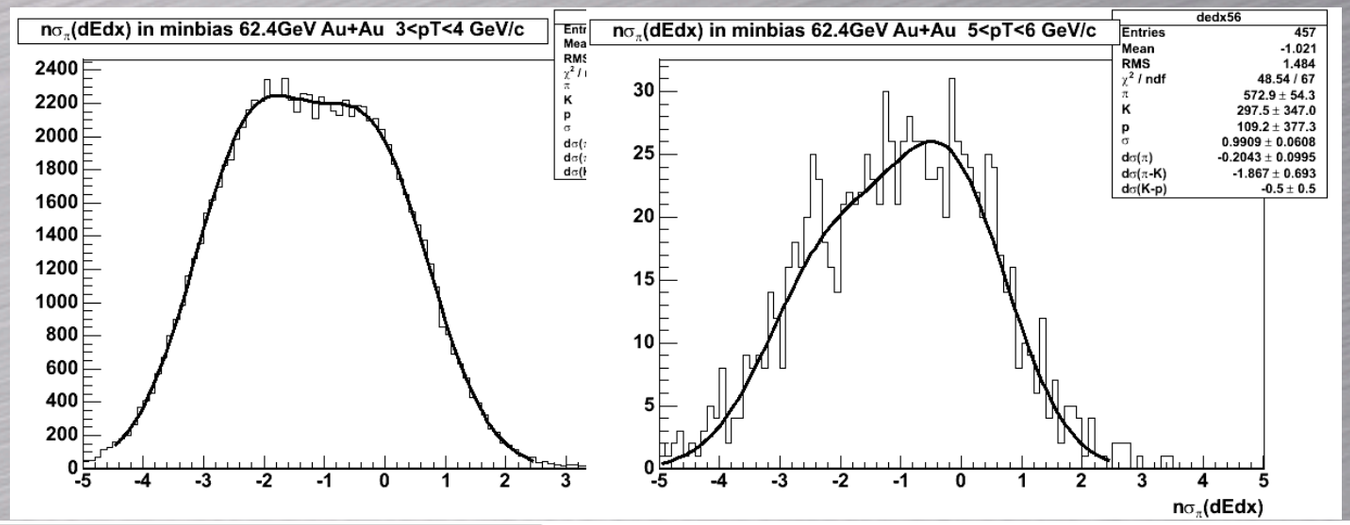
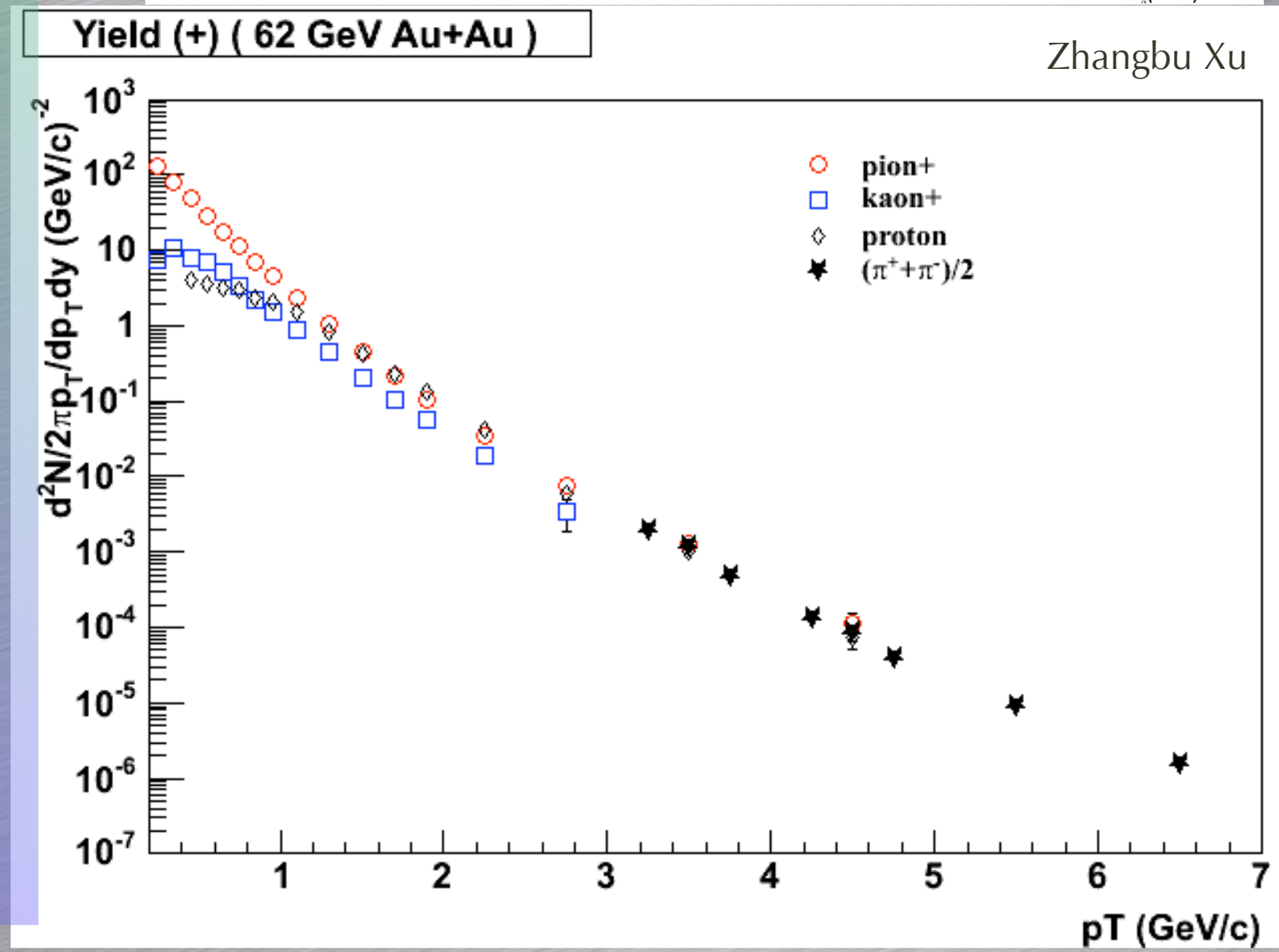
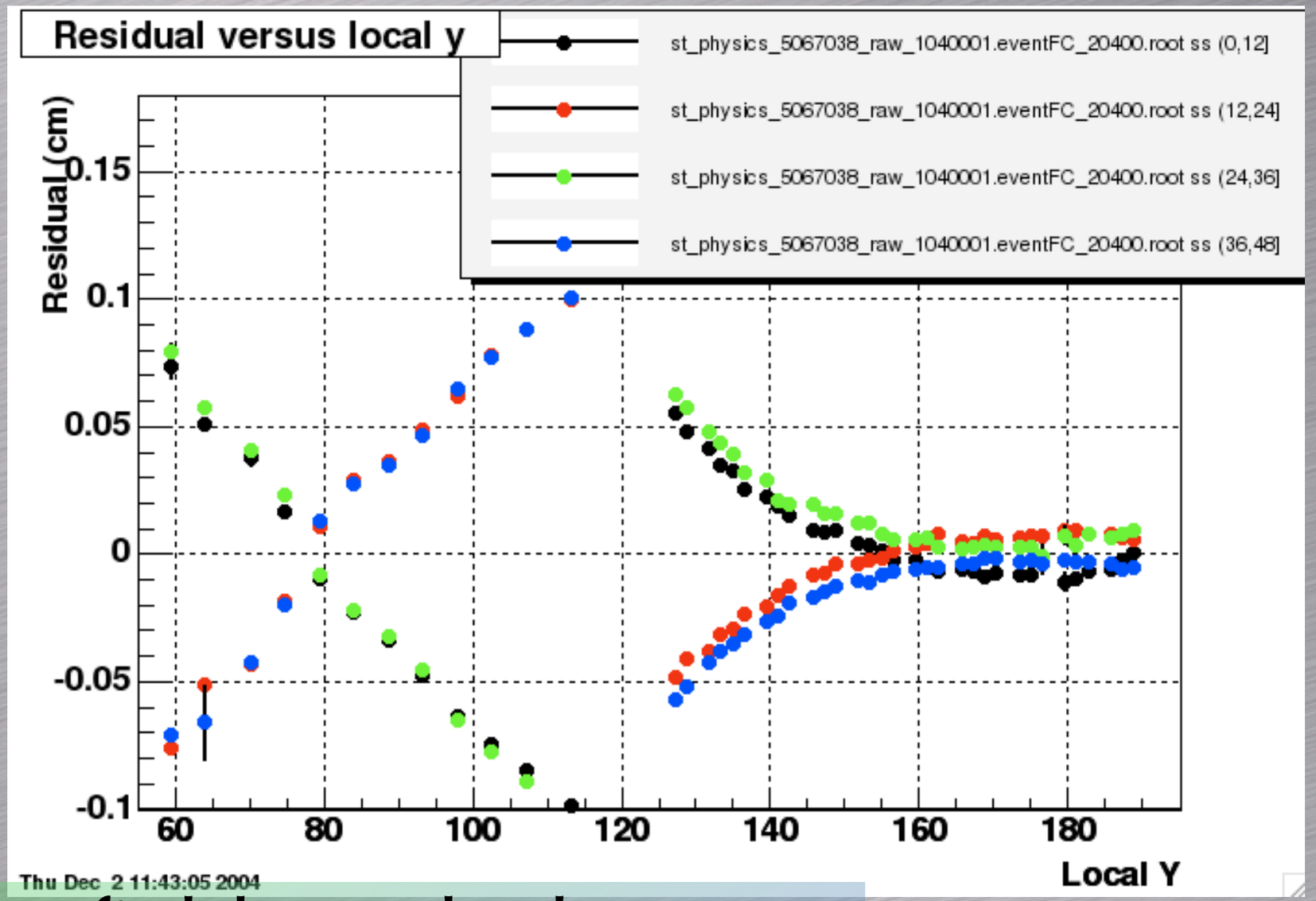


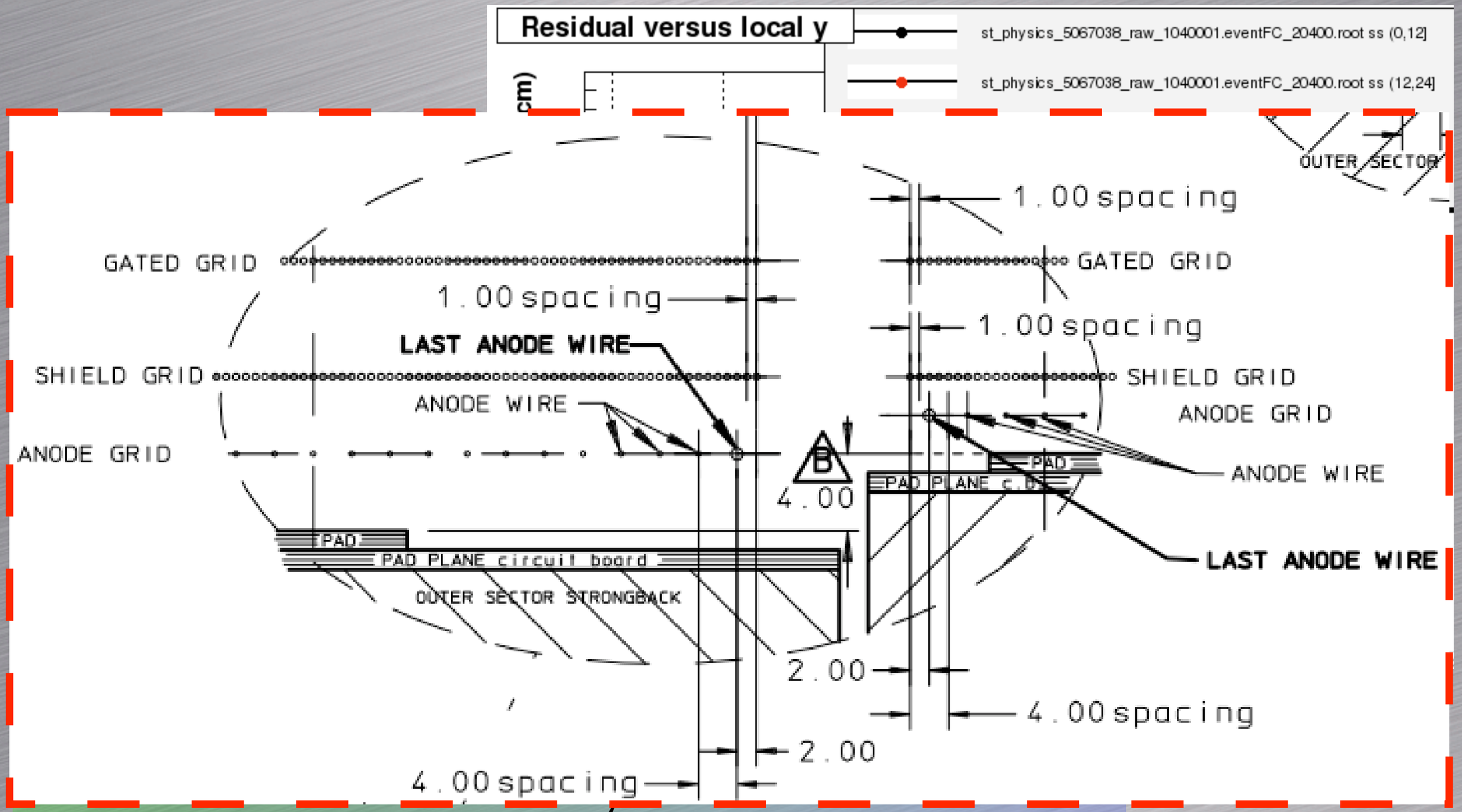


TPC GridLeak distortion



- Dependence on field, track charge, location, luminosity consistent with ion leakage at gating grid gap

TPC GridLeak distortion



ion leakage at gating grid gap

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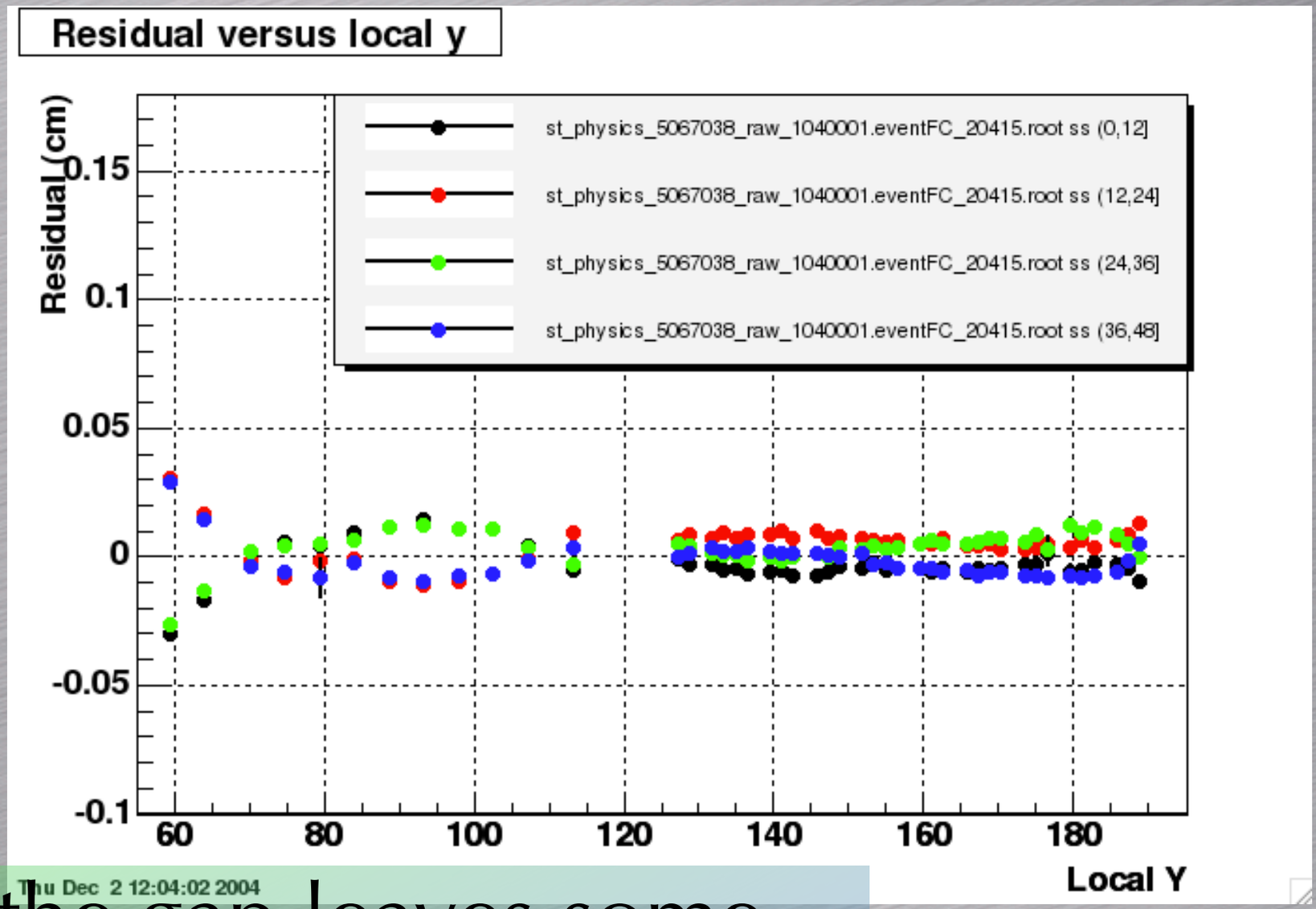
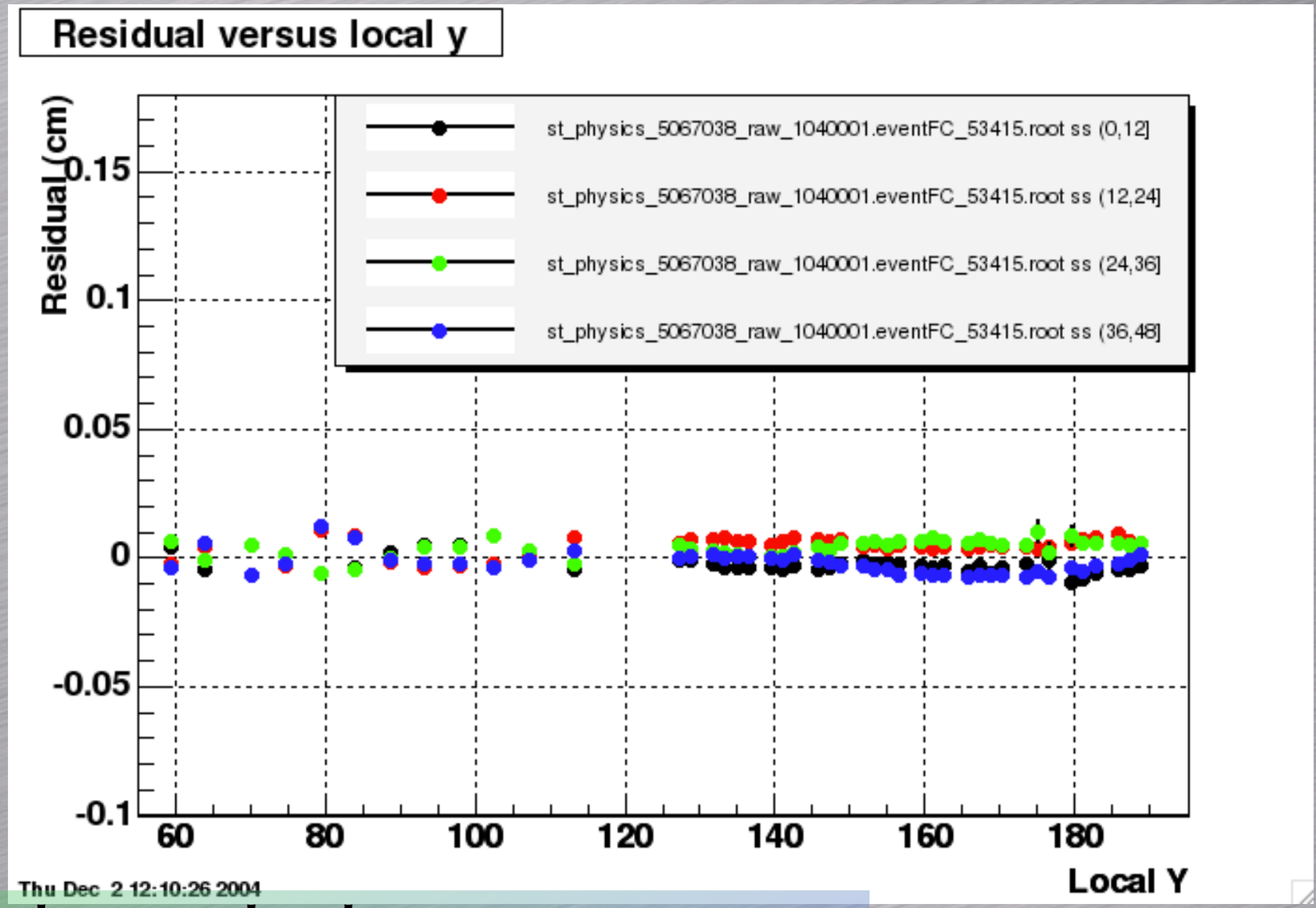


- Correcting for the gap leaves some residual effects: perhaps our shape for SpaceCharge is not quite right, or another leak near IFC!

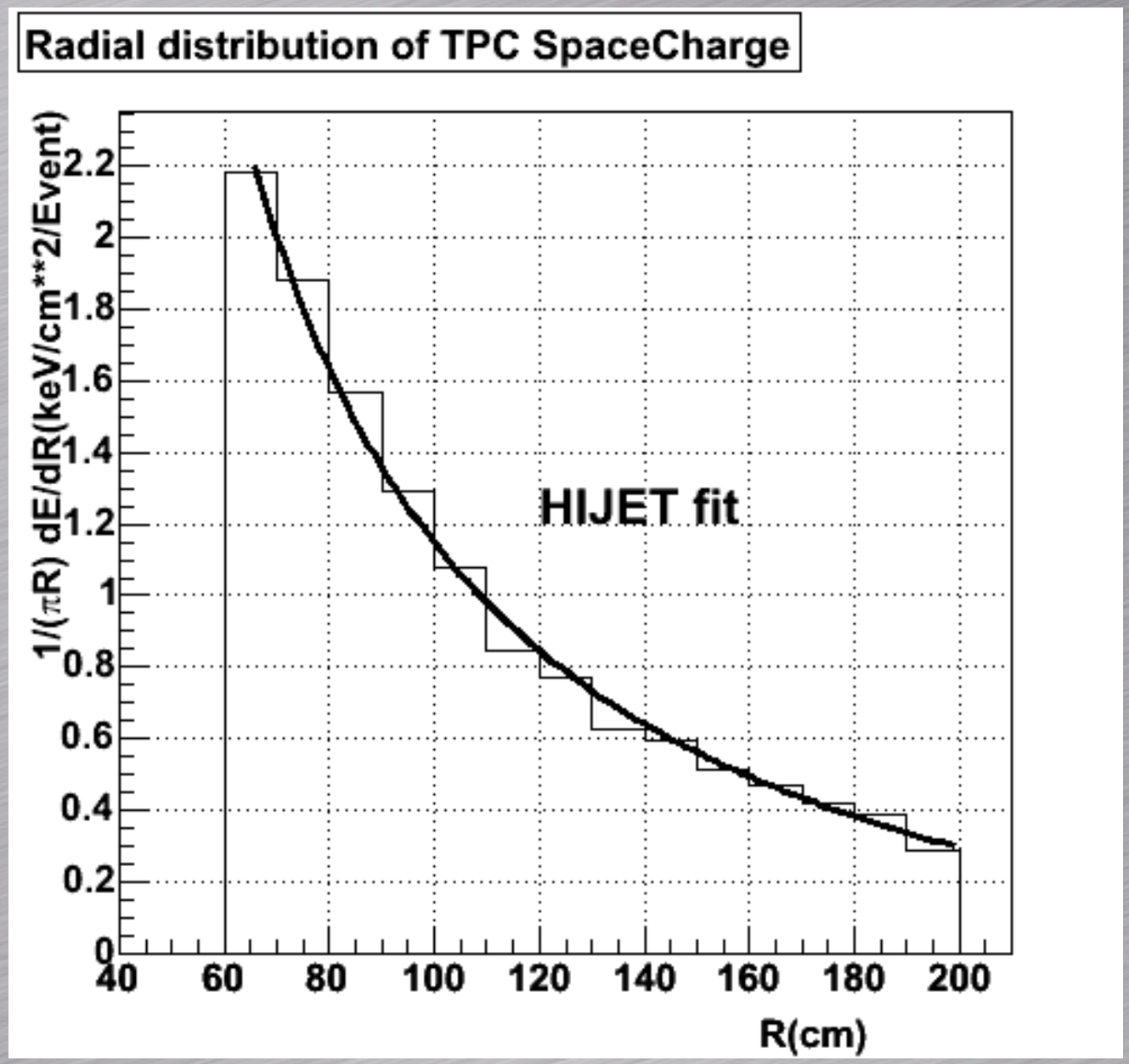
TPC GridLeak distortion



- Can bring this down below +/-100 microns by changing SpaceCharge!

SpaceCharge: model

- HIJET model of 200 GeV AuAu collisions matches radial distribution of zerobias data well for much of the run



Year 5 Readiness

- **TPC**
  - We expect pileup in CuCu!
  - Survey (going in soon), T0, twist, pad response all will be done early in the run (Javier)
  - Automation of drift velocity from lasers in progress (Javier)
  - dE/dx: final will need final calibs (Yuri)
  - SpaceCharge will be studied early in the run (Gene)
    - Scaler dependence, E-by-E applicability, GridLeak

Year 5 Readiness

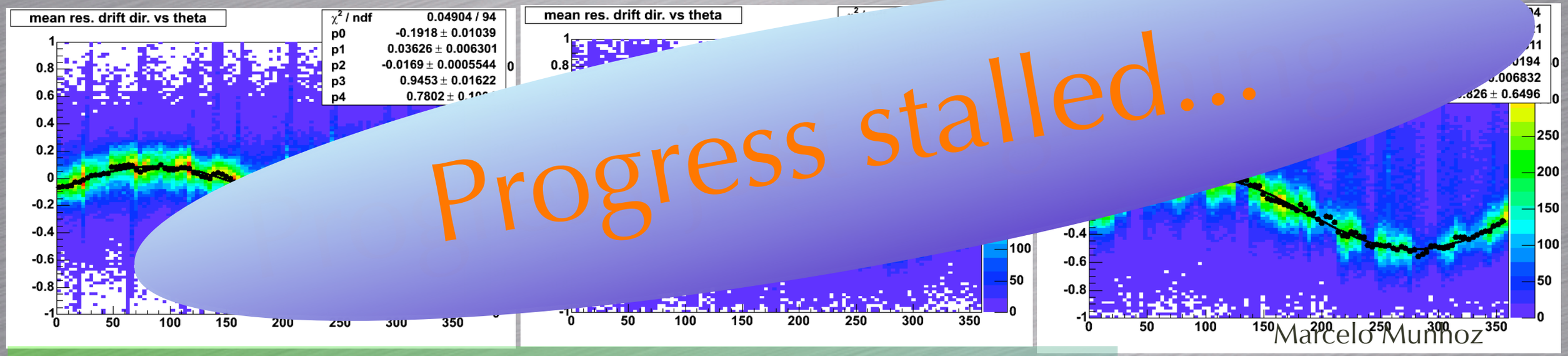
- **SVT**
  - Alignment needs to be redone (cone was removed during the break)
  - Drift velocities will be determined early in the run and monitored every ~week
  - Expecting no “burn-in” issues this year (SVT plans to be “on” full-time)
- **SSD**
  - ???

Year 5 Readiness

- **FTPC**
  - Lots of (backup) temp sensors this year, plans to automate insertion of data into DB
  - Drift velocities monitored (Terry)
  - Redo alignment for each field (Terry)
- **TOF**
  - Slewing
- **BEMC/EEMC**
  - Gains

SpaceCharge: SVT residuals

Barrel 1 Barrel 2 Barrel 3



Progress stalled...

Marcelo Munhoz

- Fixed detector comparison
- Three planes of distortion measure
  - Different rotation at each SVT barrel
- Can do in ITTF ***during*** tracking
  - Include same event in measure

$\theta = \mathrm{atan}(y/x)$

mean residual =
$-\Delta x \cdot \sin(\theta) + \Delta y \cdot \cos(\theta) + \Delta\theta \cdot \mathrm{barrel\_radius}$

Δx and Δy are shifts in X and Y
$\Delta\theta$ is a rotation on the XY-plane.

Summary

- Always seems to be something new...
- Bring on Year 5!