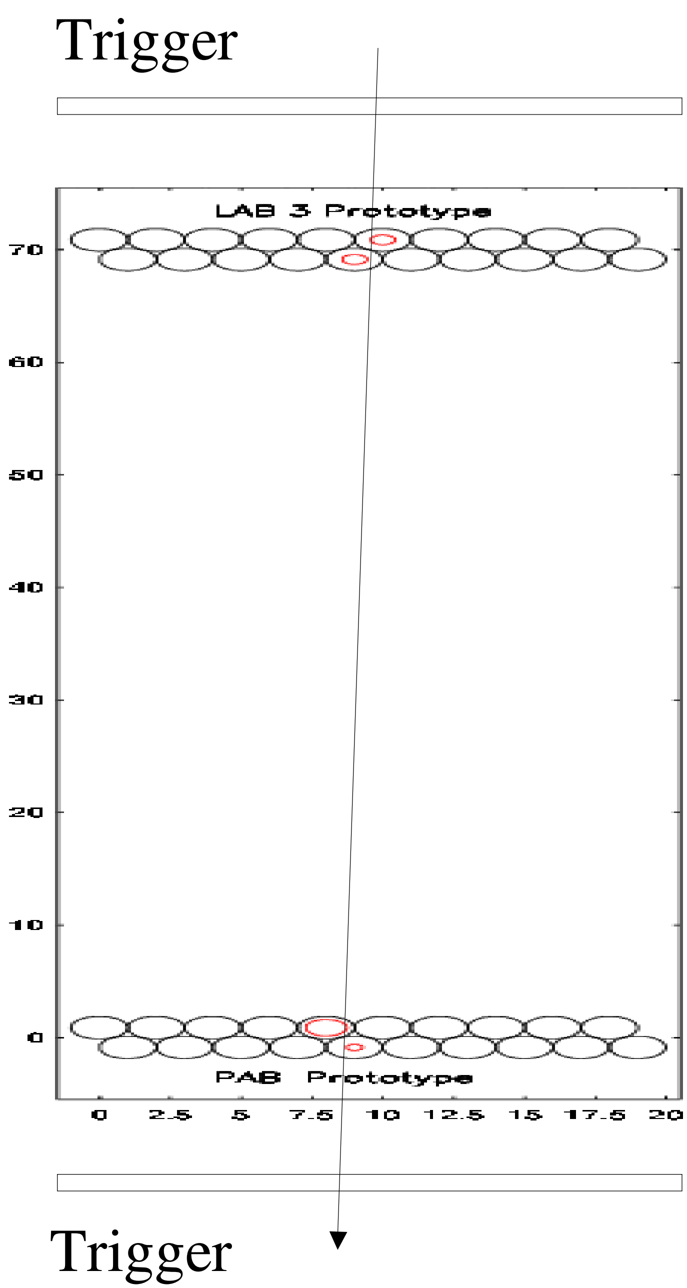


Chamber Studies using Cosmics

Analysis:

(1) X–T Calibration

(2) Selection of clean event topology to unambiguously pair hits together. Form the raw sum–of–distance (SOD) distributions.

(3) Track–Angle Correction

(4) Correction for imperfect X–T Calibration

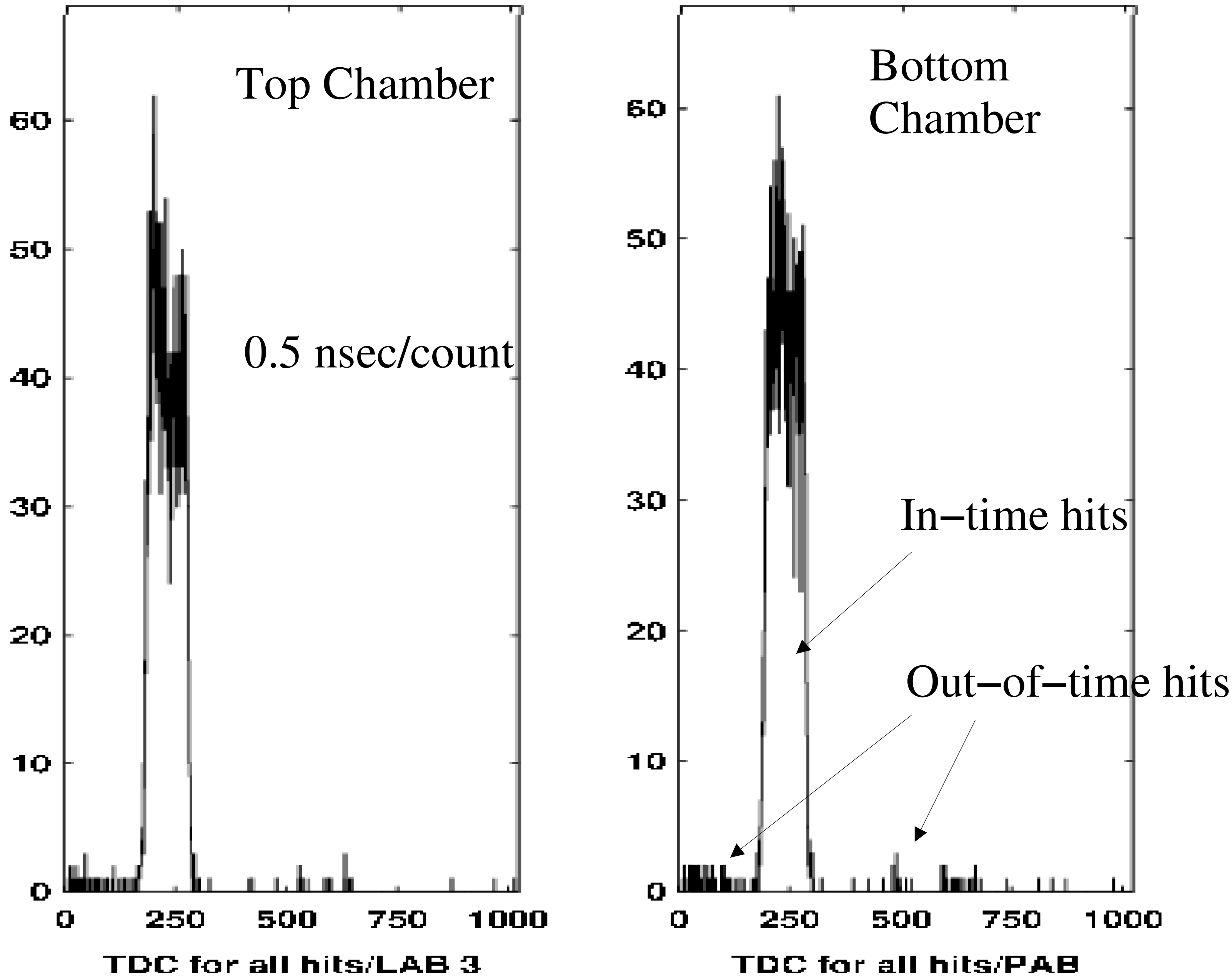
Extract:

(1) single hit resolutions

(2) efficiencies

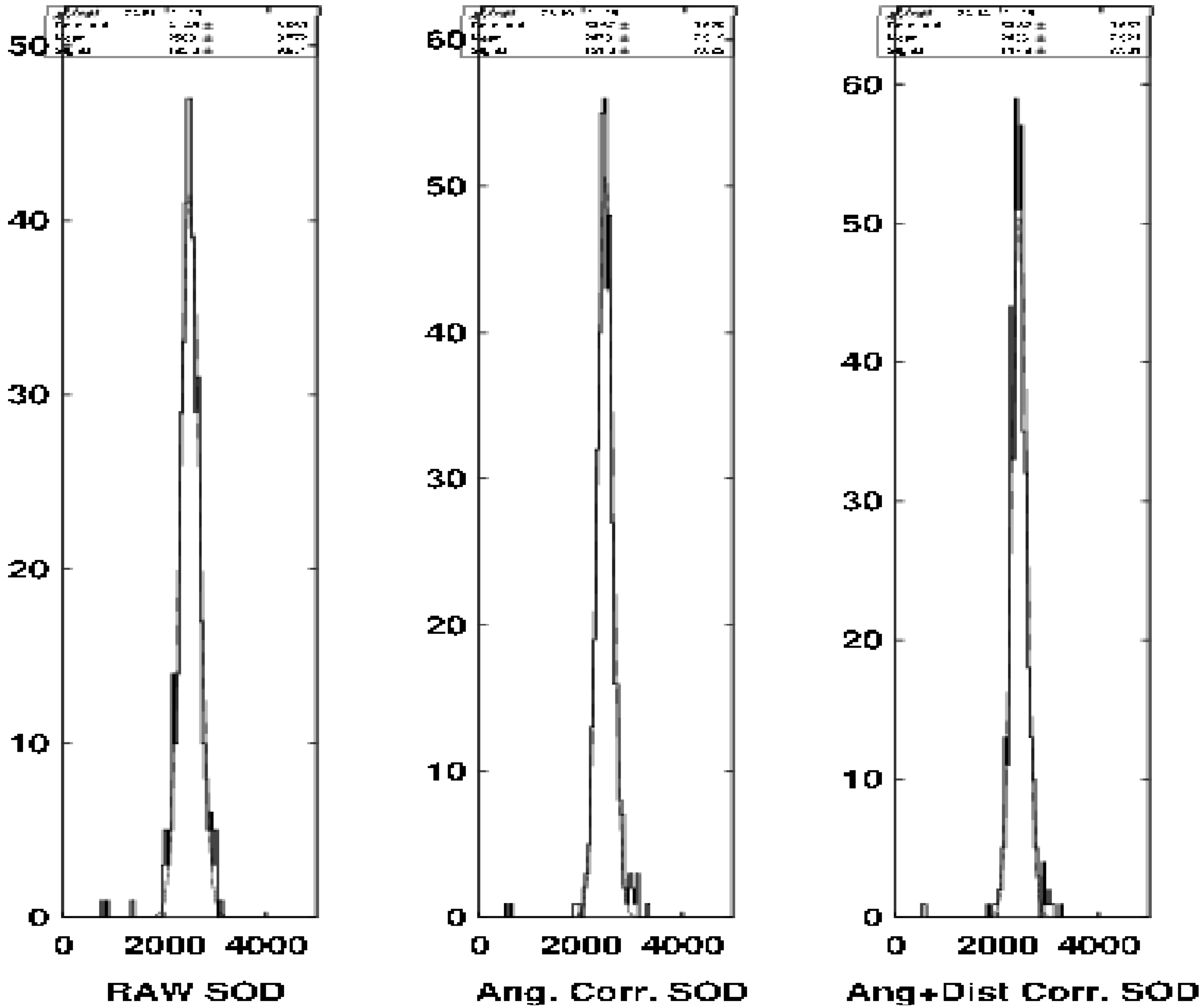
Feb–12–03

TDC Distribution of All Hits for ArEthane at 1750 Volts

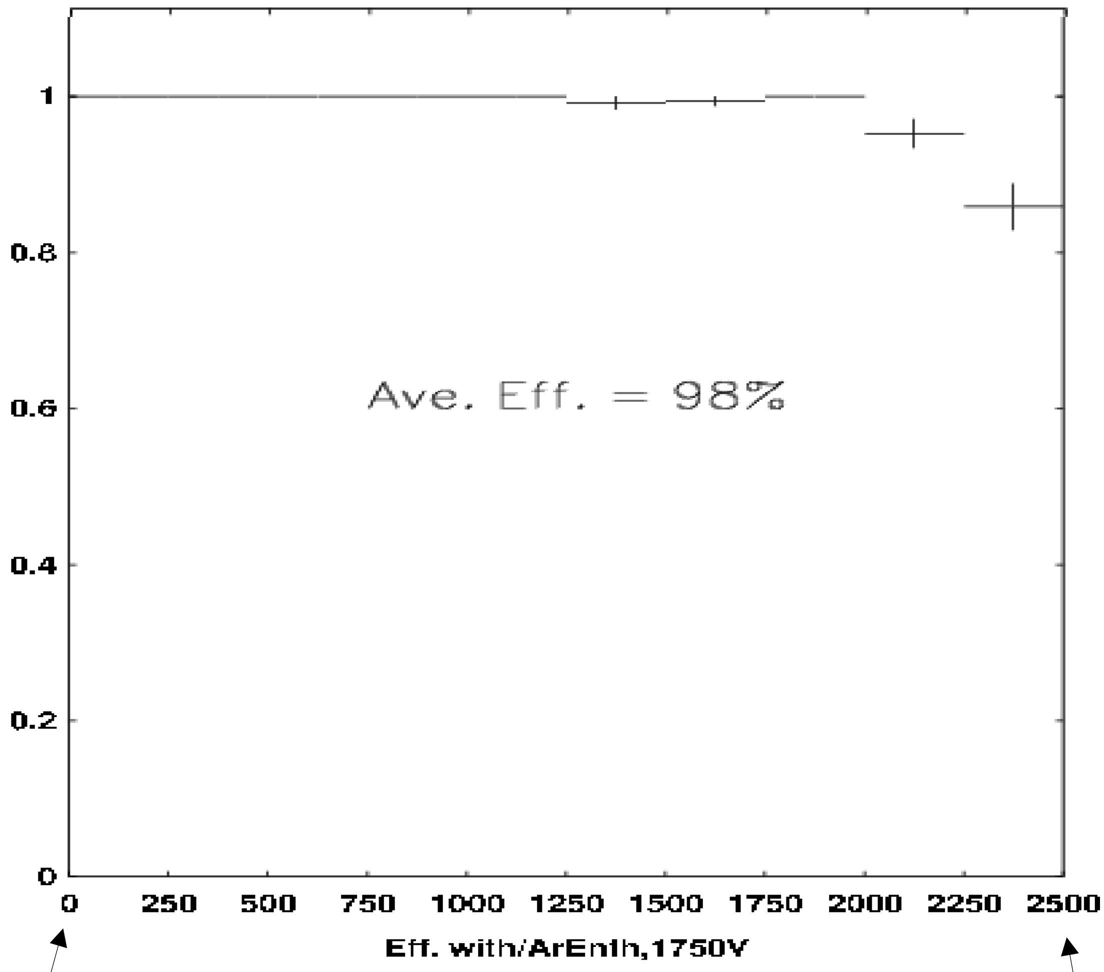


SOD vs Analysis Stage for ArEthane at 1750 Volts

σ = 131 μm   σ = 107 μm   σ = 105 μm



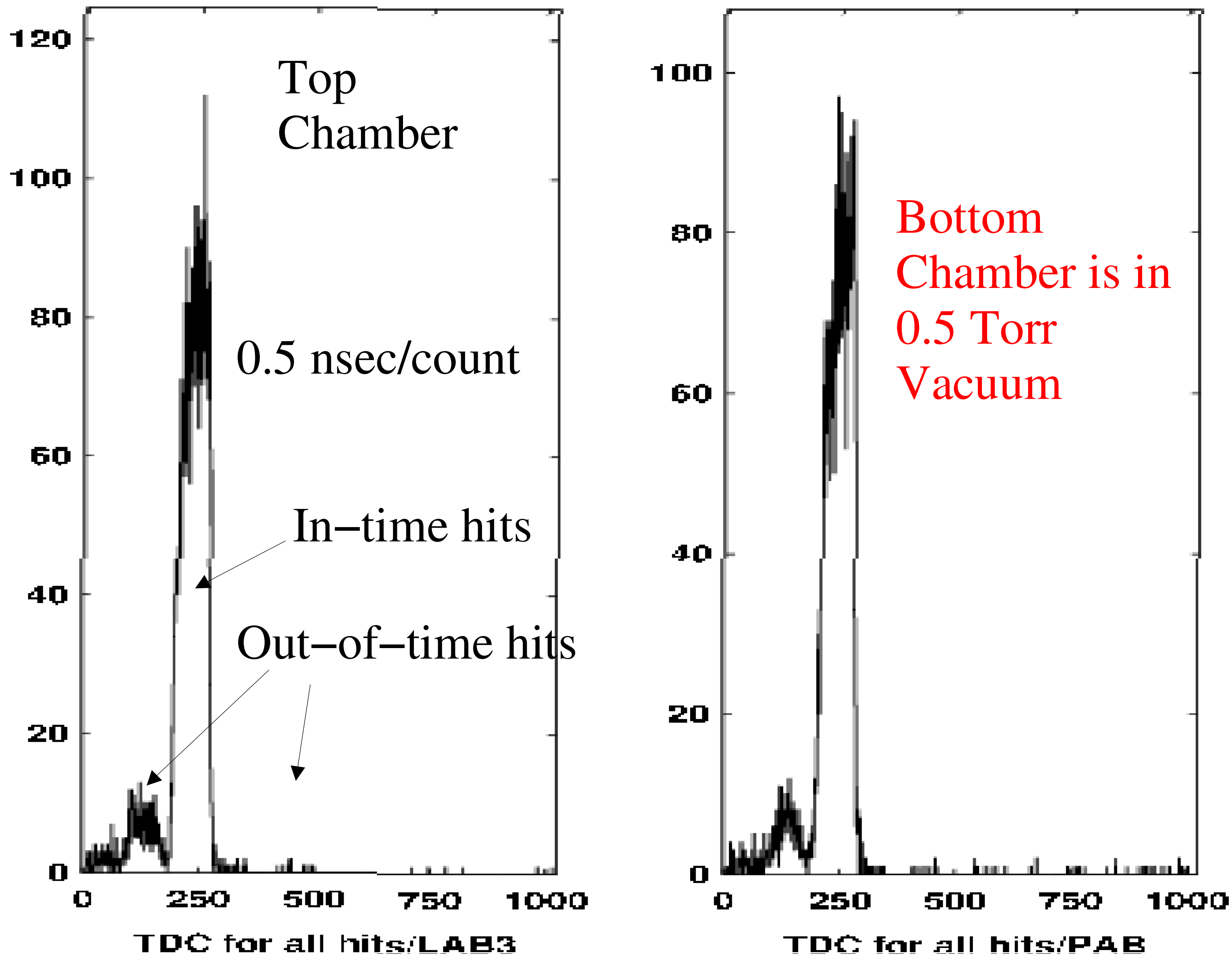
Straw Efficiency vs Track DOCA to Wire (ArEthane 1750V)



Anode Wire

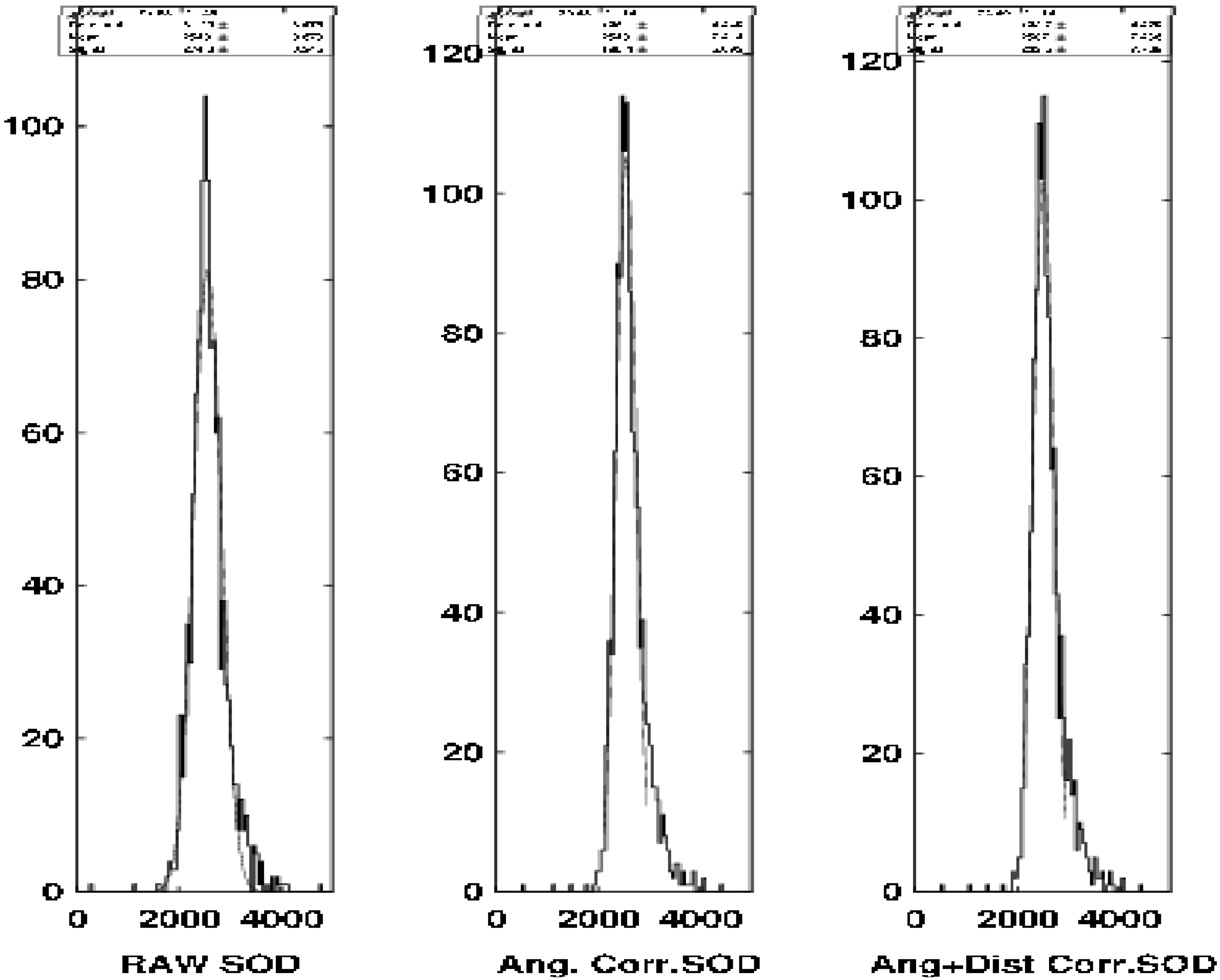
Straw Wall

TDC Distribution of All Hits for ArCO2 at 1500 Volts



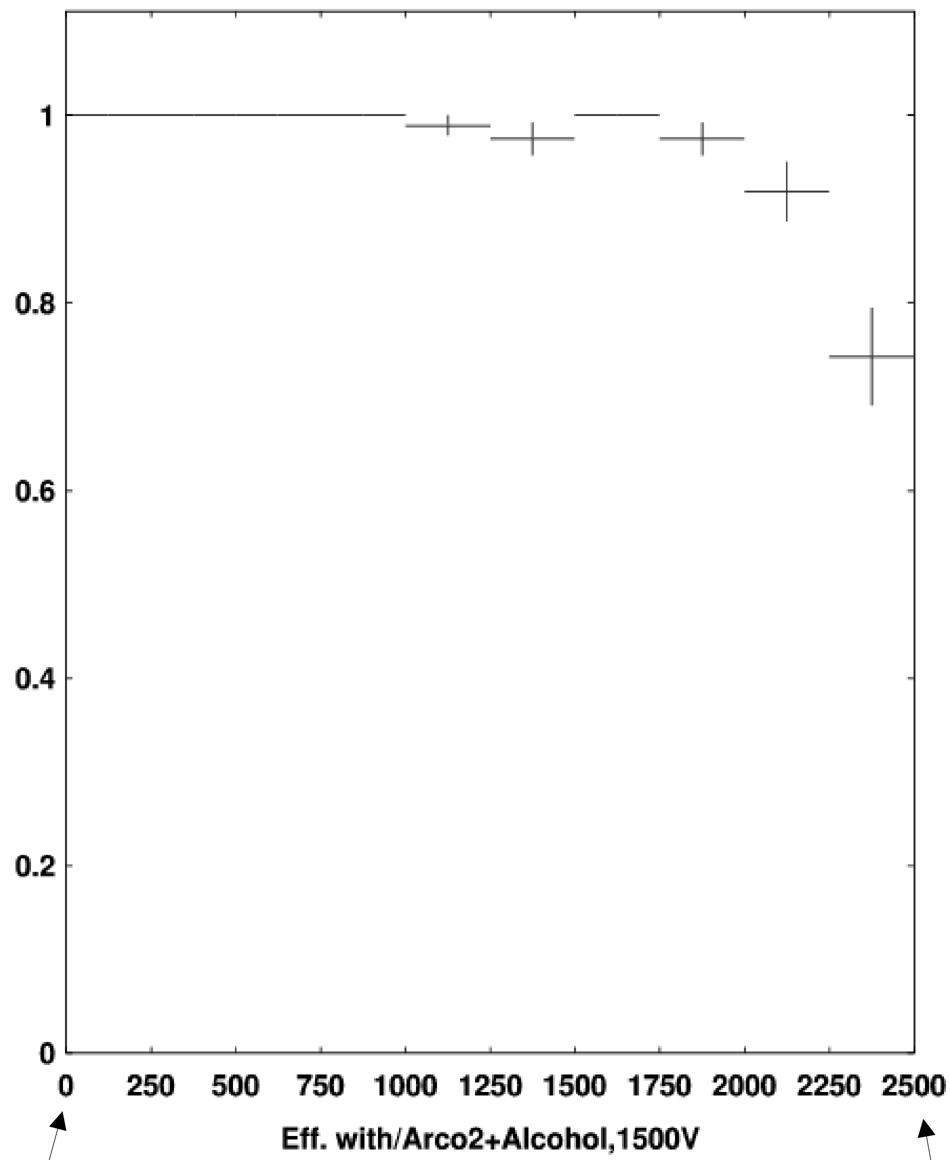
SOD vs Analysis Stage for ArCO2 at 1500 Volts

σ = 194 μm   σ = 148 μm   σ = 140 μm



Bottom Chamber in 0.5 Torr Vacuum

Straw Efficiency vs Track DOCA to Wire (ArCO2 1500V)

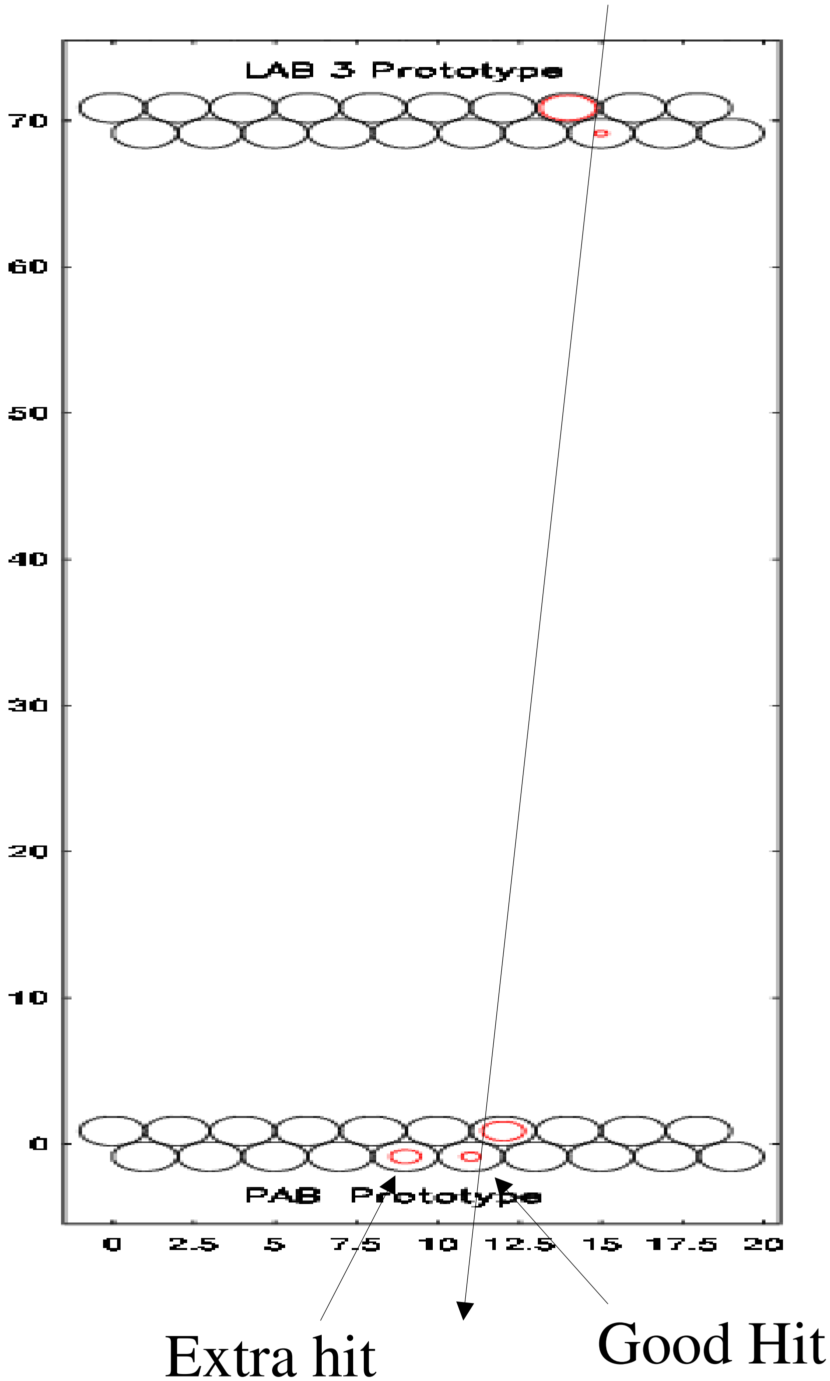


Anode Wire

Straw Wall

96% average efficiency

Bottom Chamber in 0.5 Torr Vacuum



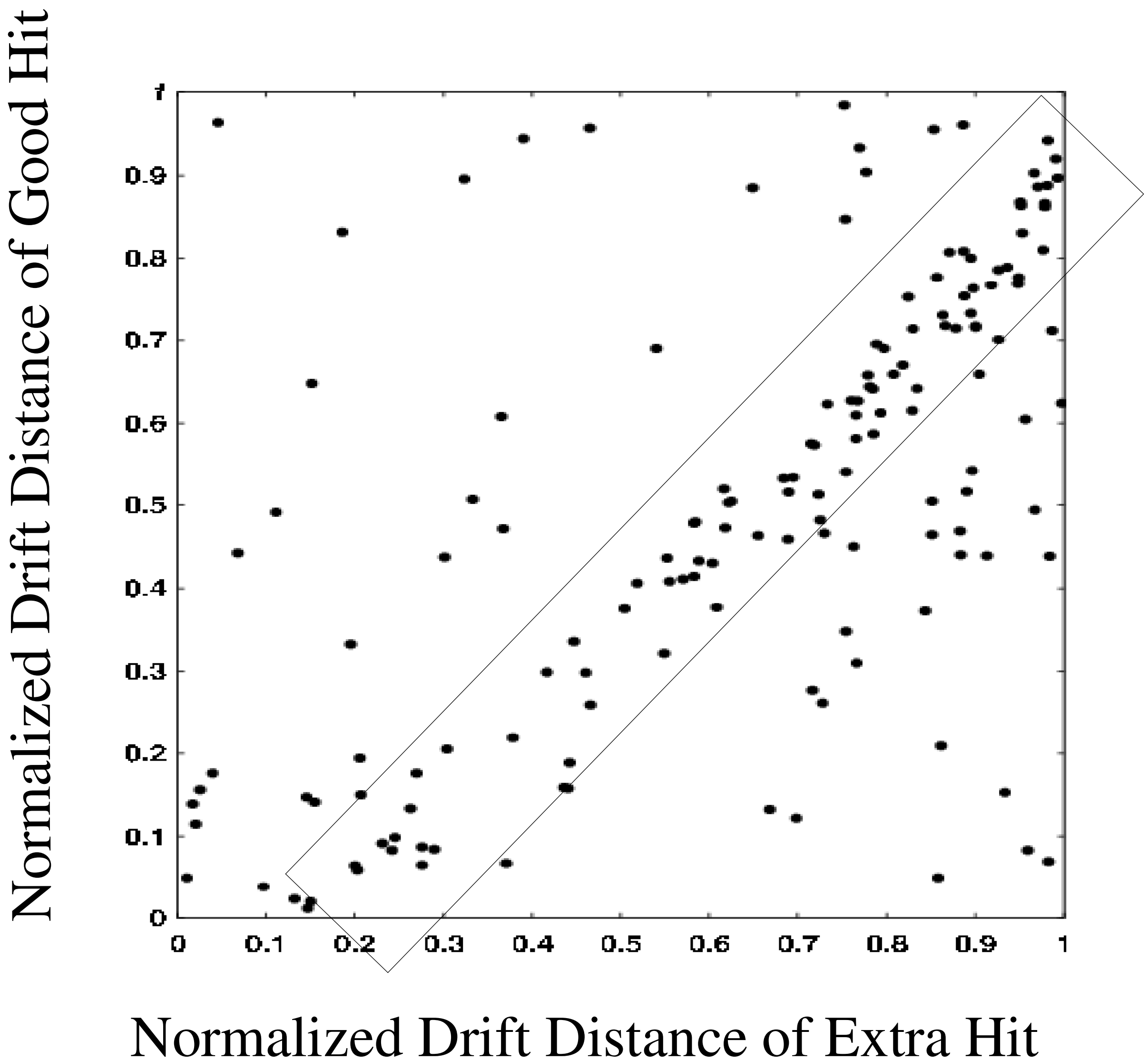
A First Look at Extra Intime Hits

• Source of pattern recognition errors

• Can be electronics noise or real extra hit (δ–rays)

• Occurs in 25% of all events that we can identify as clean cosmics

Study the distance correllation between good hit and extra hit



Extra Hit Trails Good Hit by 5 nsec

Other Ongoing DMS Efforts

- Mark Kozlovsky (PPD Electrical Engineer) is starting to layout amplifier/discriminator board.

- 100 straws under vacuum since Jan–1st –03.

- Big push towards a full–scale chamber design.

- Improve trigger acceptance to cosmics.

- Flow flammable gas in straws in vacuum.