

# ***Forward Tracker Beam Test Results***

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## Tracker Beam Test Setup

- *All three planes: Y1, Y2, and X.*
- *Y1, Y2 counters with single fibers.*
- *Y1, Y2 lower 48/128 counters instrumented to cover Čerenkov.*
- *X counters with double fibers; 32/32 instrumented.*
- *Y1, Y2 with and without  $\times 10$  amplifiers.*
- *X counters' fibers summed directly near PMT base and with T-connector at lemo end.*
- *Target: 4 cm LH2 ( $0.289 \text{ g/cm}^2$ ) and Thin C ( $0.888 \text{ g/cm}^2$ ).*
- *$E_e = 5.71$  and  $3.46 \text{ GeV}$ .*
- *$I_e = 0.20$  to  $0.35 \mu\text{A}$ .*

## Single Counter Pulse Heights and Rates

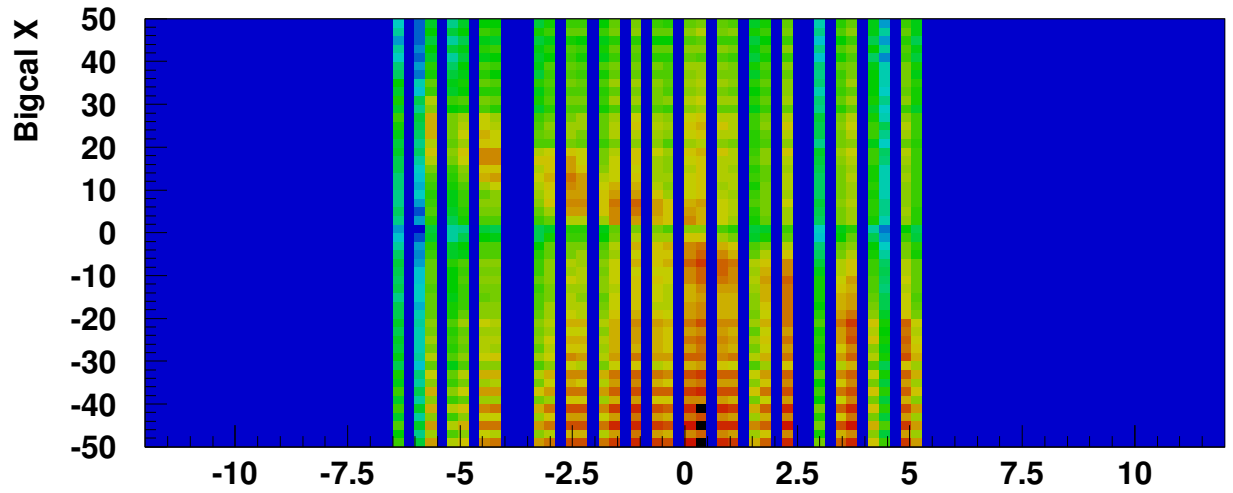
- $I_e \sim 0.35\mu A$ , LH2, Discr. @25 mV
- **Pulse heights  $\sim 50-60$  mV for all three planes.**
- **Y1 PMT sagged above  $I_e \sim 0.25\mu A$ .**

<i>Plane</i>	<i>Avg. Rate (MHz)</i>
<i>Y1</i>	<i>3-4</i>
<i>Y2</i>	<i>1-2</i>
<i>X</i>	<i>&lt;1</i>

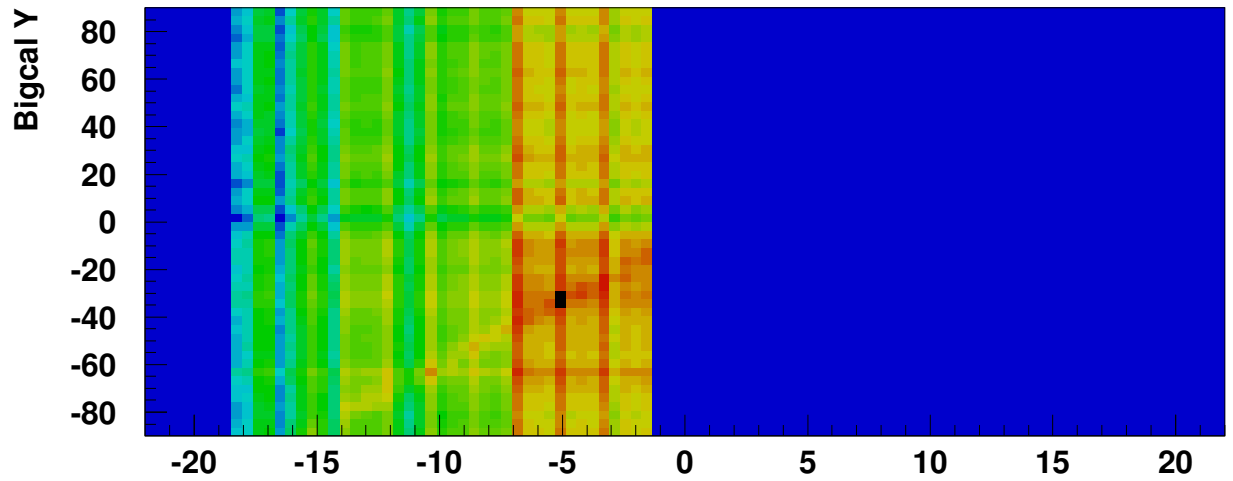
## **Implemented Cuts**

- **BigCal cluster  $Y \pm 5$  cm.**
- **BigCal cluster  $X \pm 7$  cm.**
- **Čerenkov TDC  $\pm 25$  ns.**
- **Lucite TDC.**

# *X-Y Coordinate vs BCal X-Y*

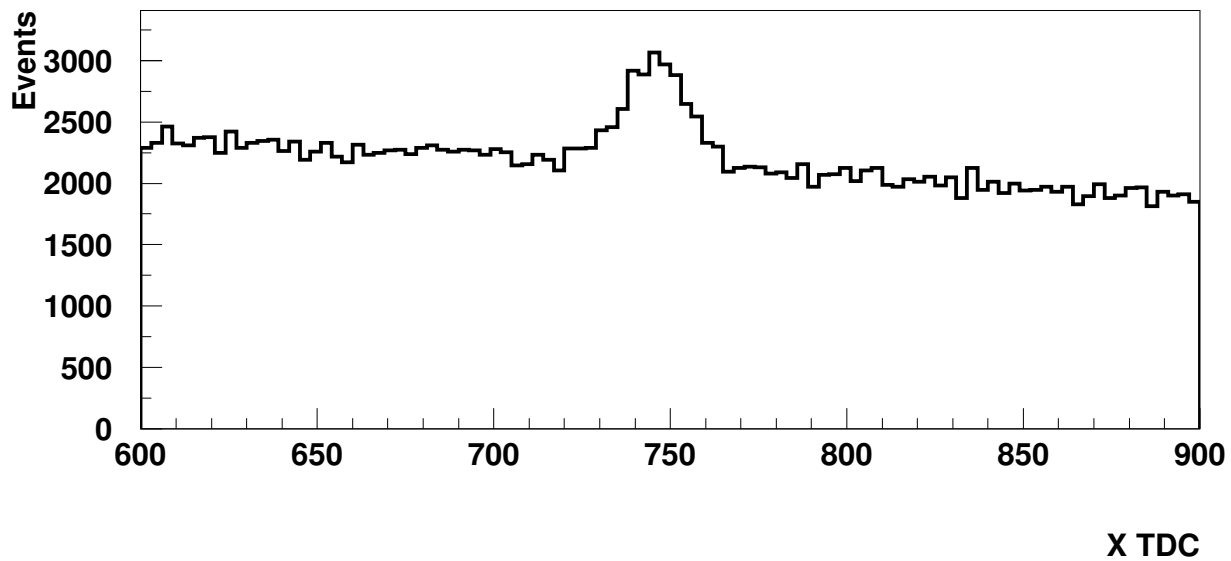
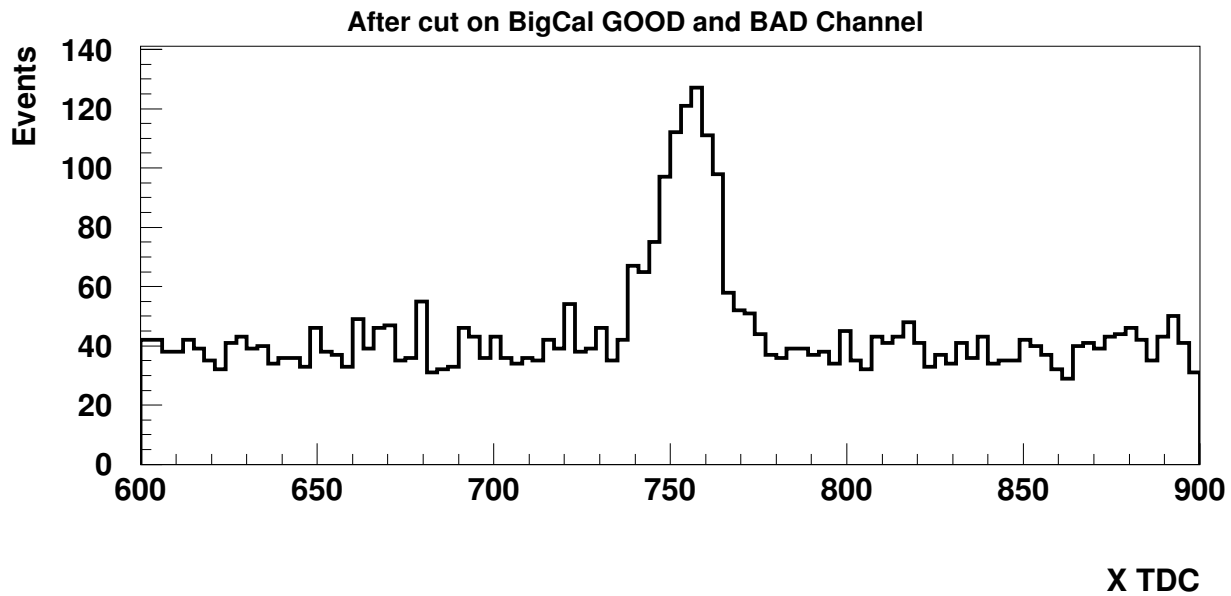


Tracker X

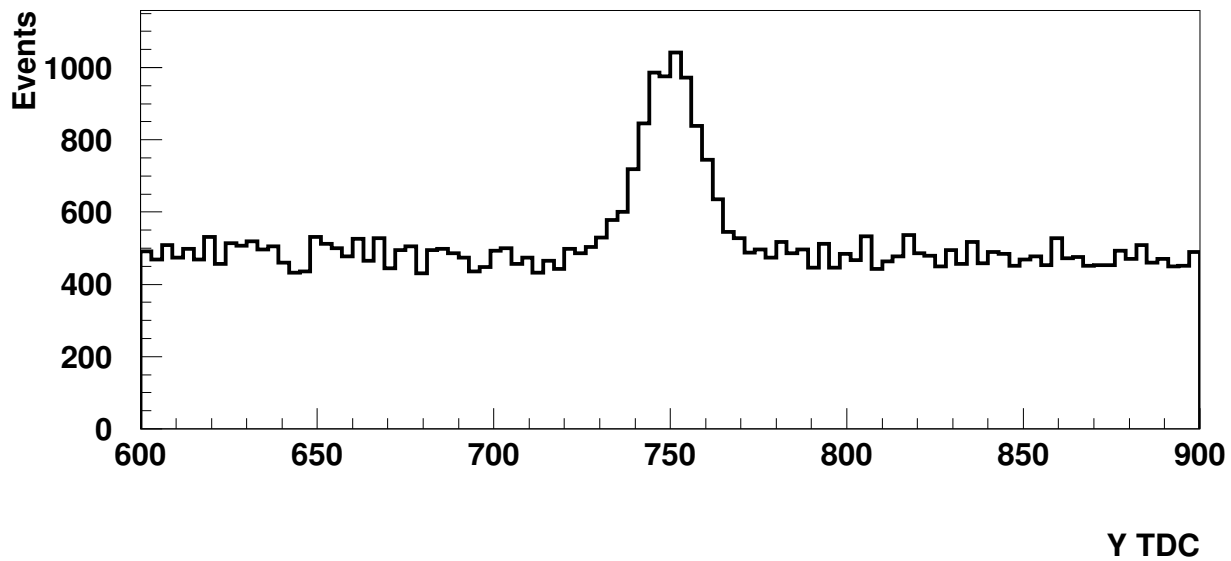
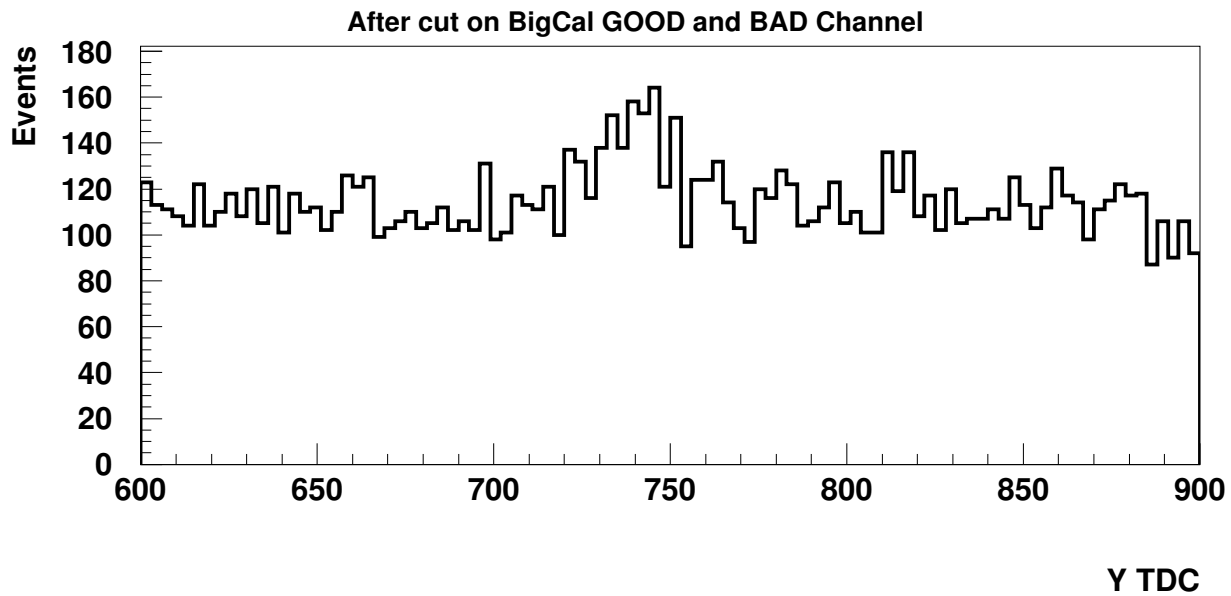


Tracker Y

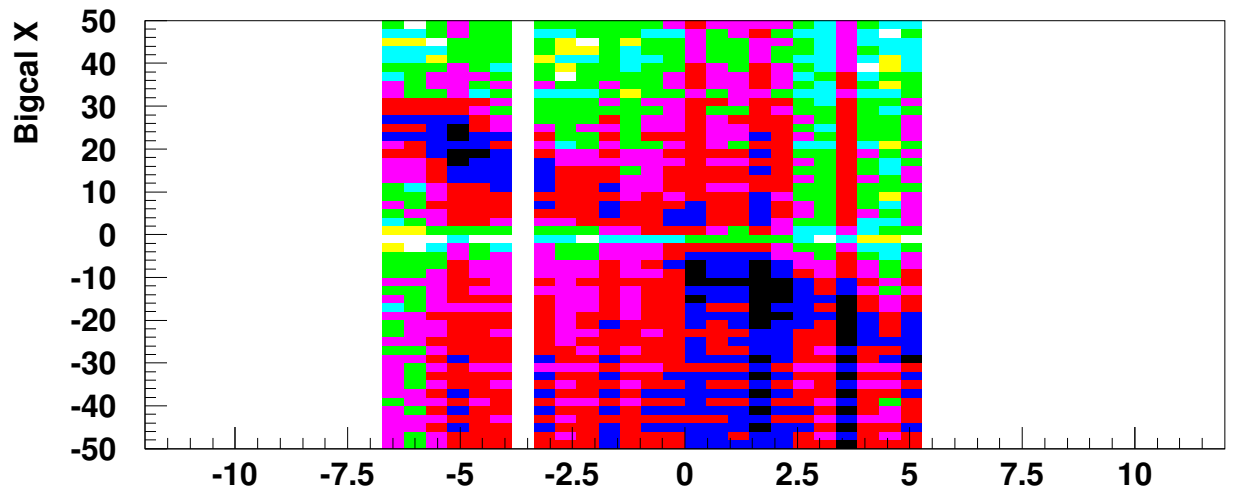
# Single X Cntrs w/ BCal X Cuts



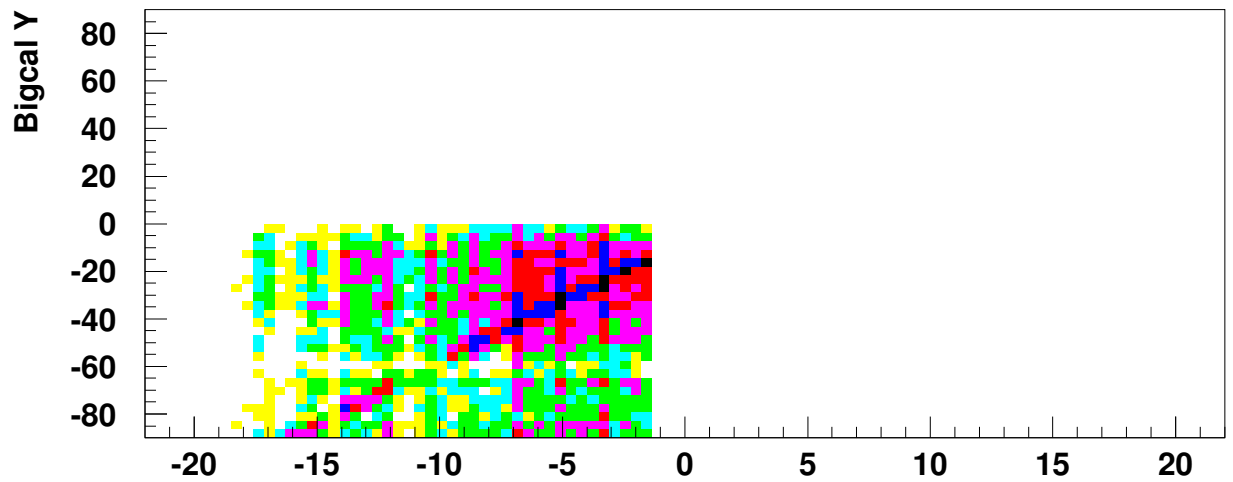
# Single Y Cntrs w/ BCal Y Cuts



# *X-Y Coordinate vs BCal X-Y + Čer Cuts*



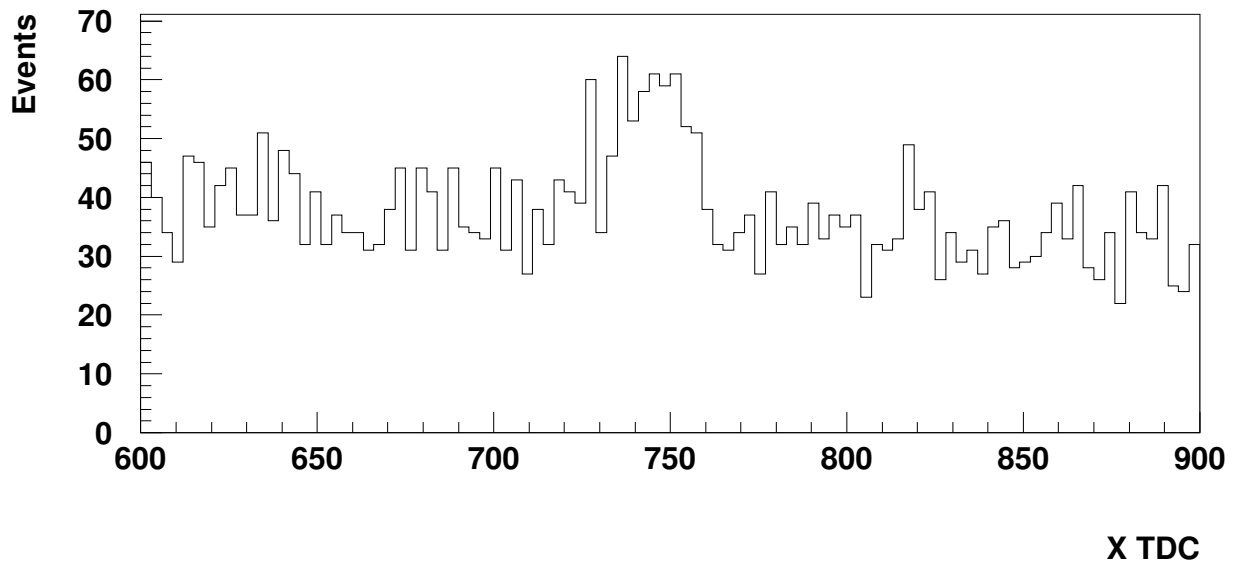
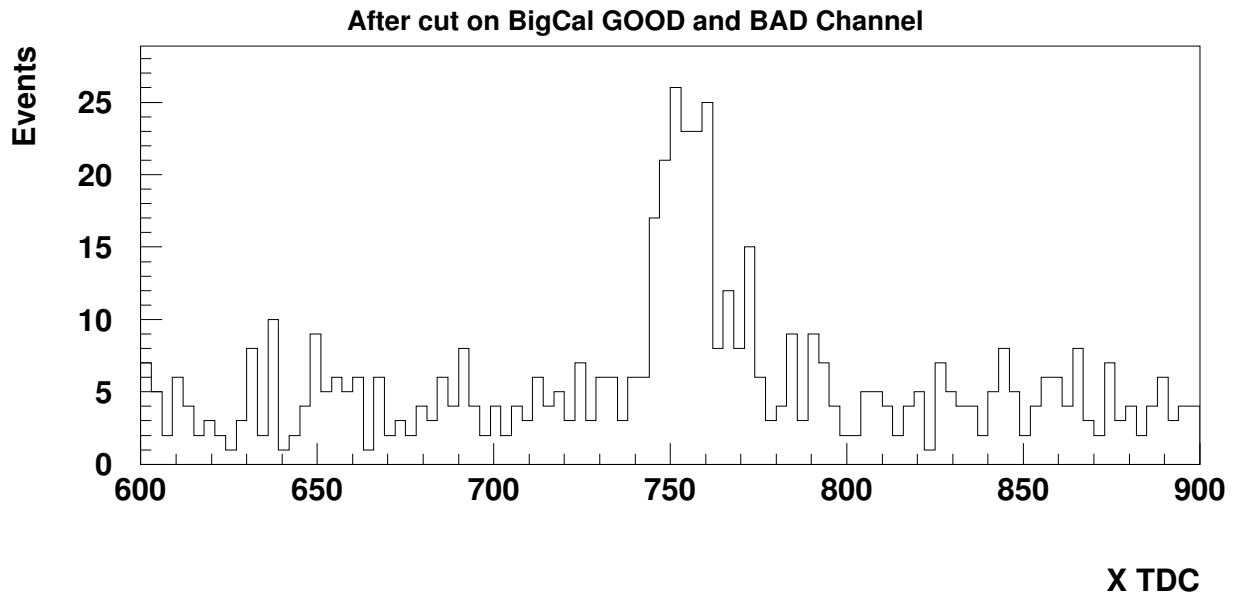
Tracker X



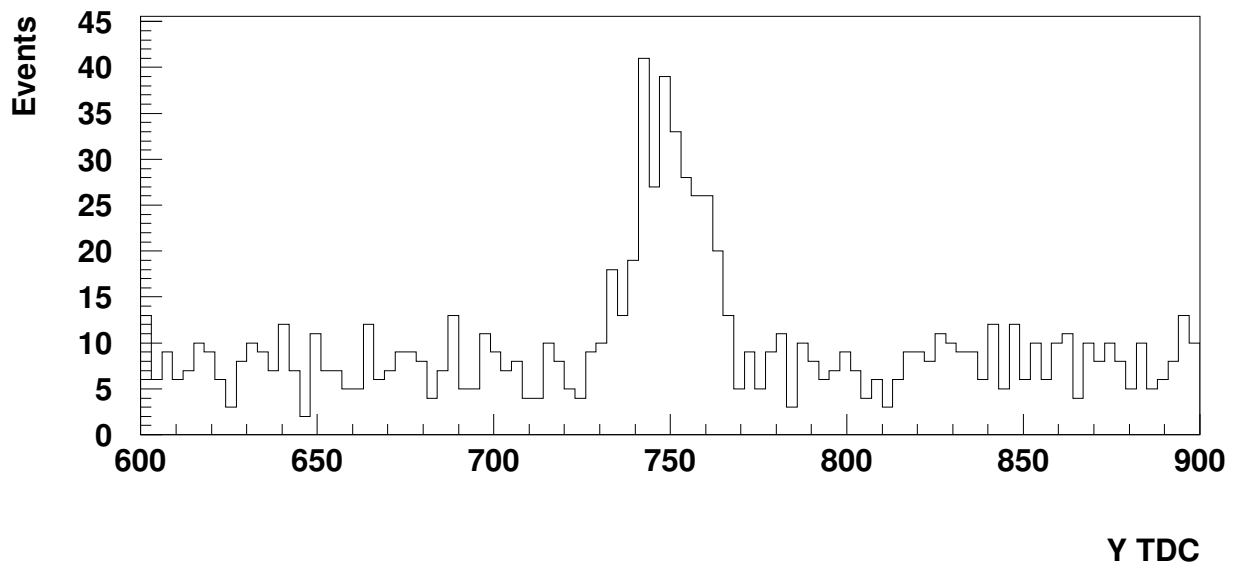
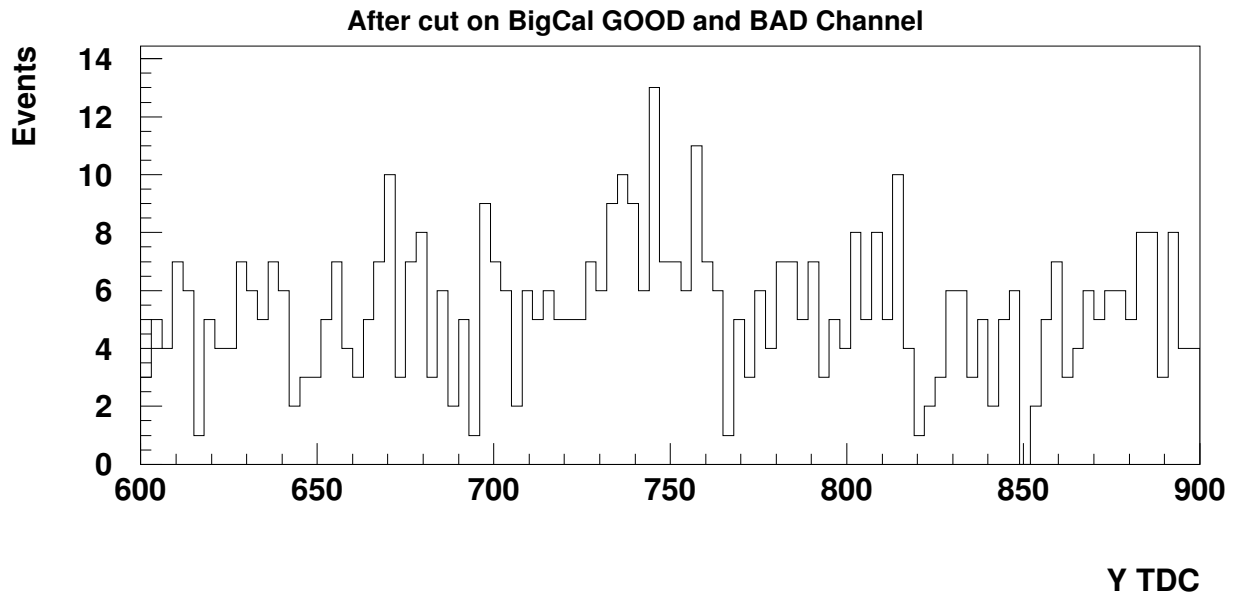
Tracker Y



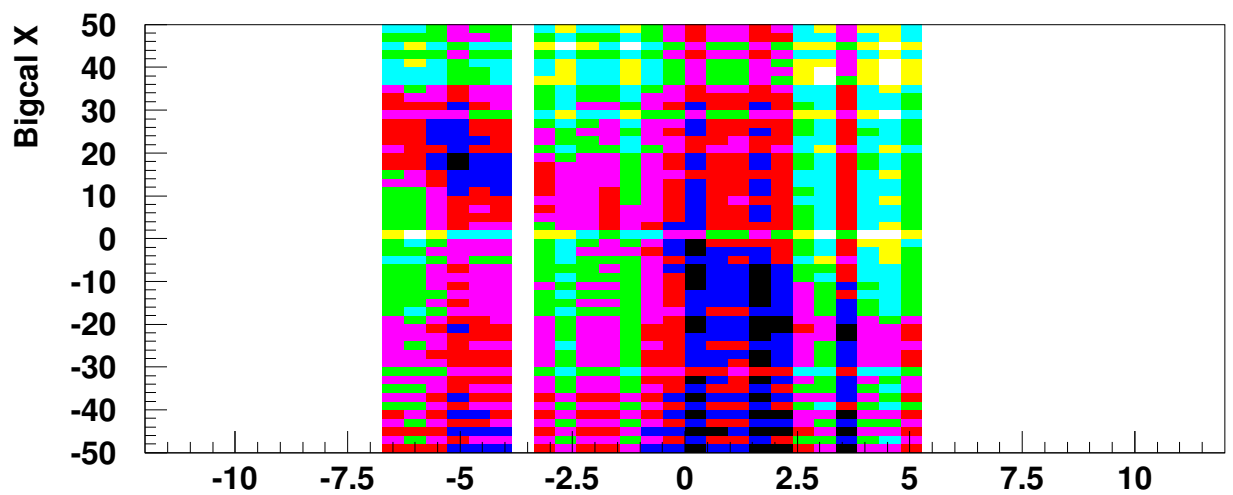
# Single X Cntrs w/ BCal X + Čer Cuts



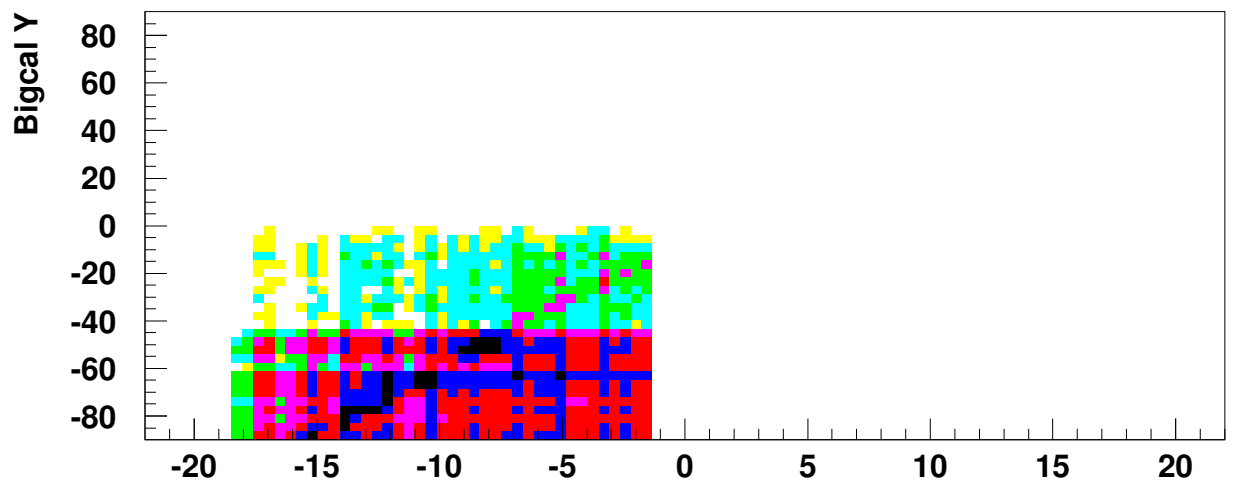
# Single $\Upsilon$ Cntrs w/ BCal $\Upsilon$ + $\checkmark$ er Cuts



# *X-Y Coordinate vs BCal X-Y + Čer + Luc Cuts*

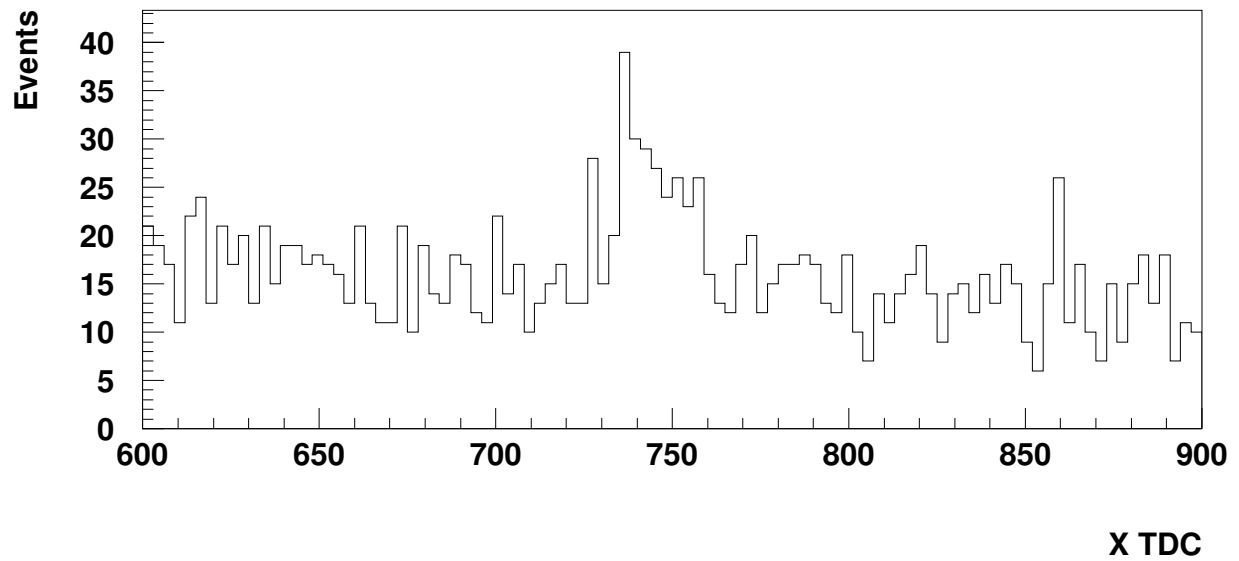
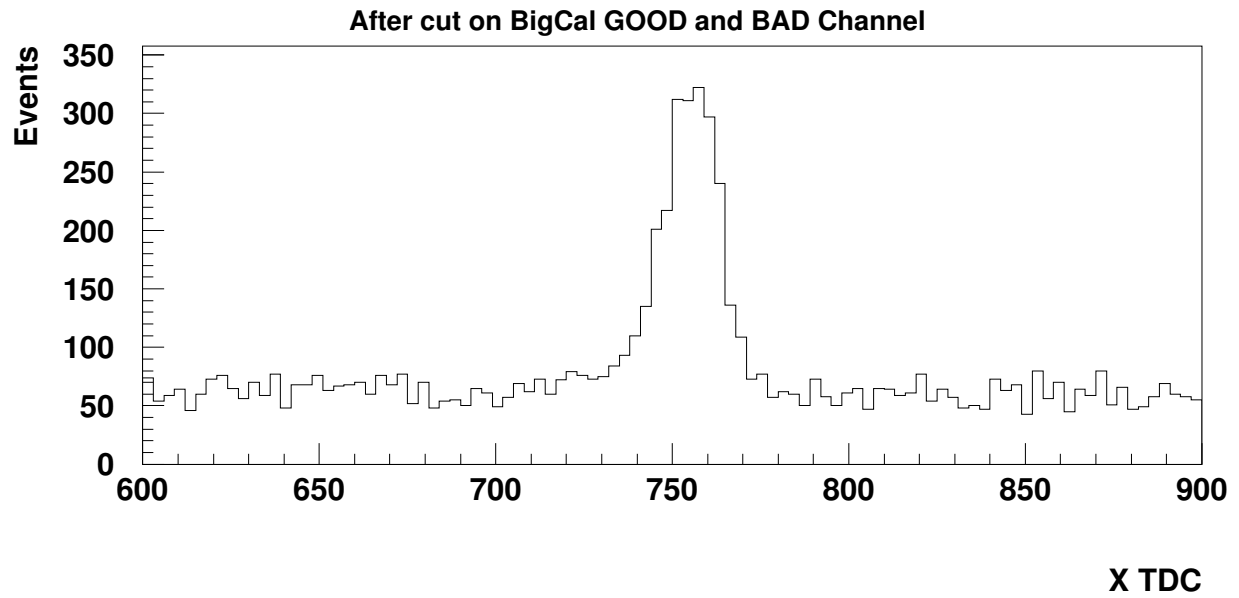


Tracker X

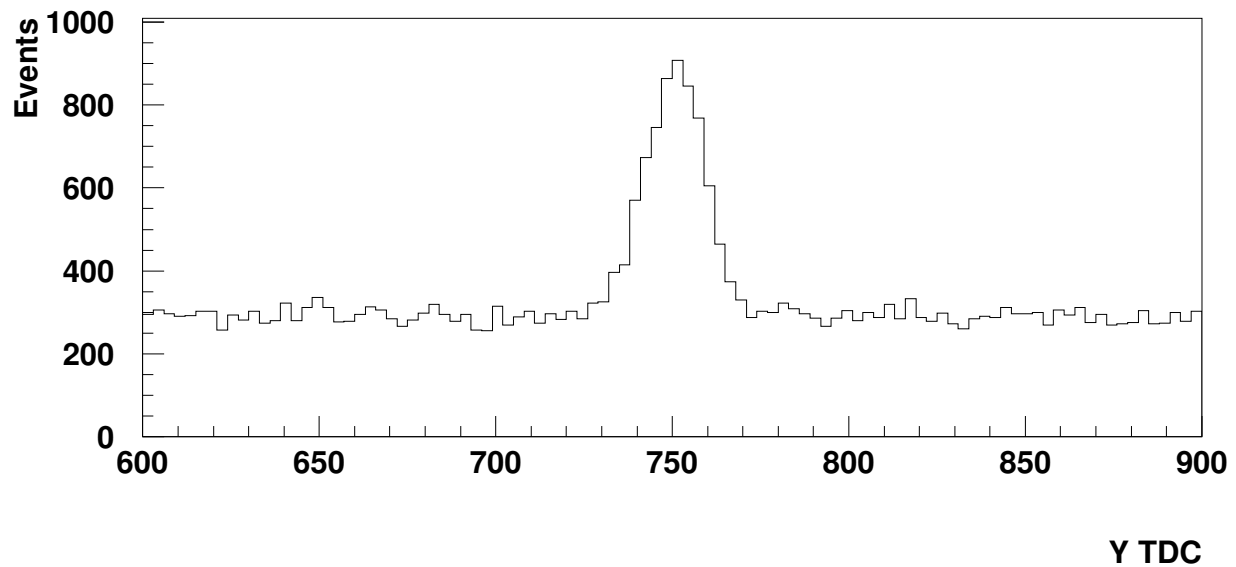
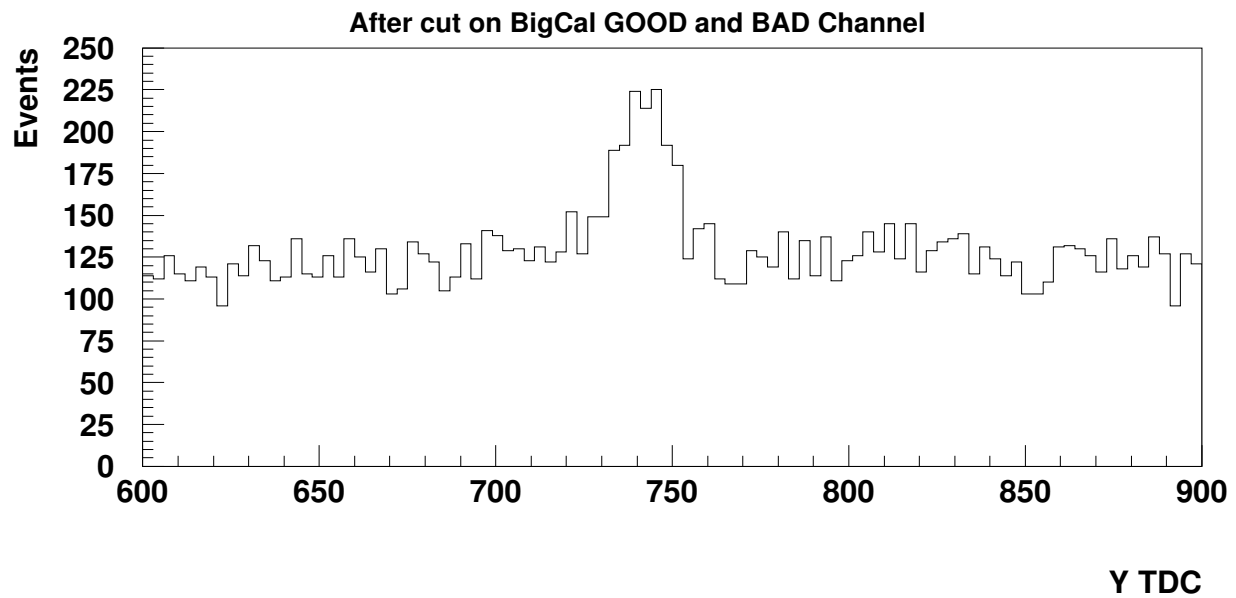


Tracker Y

# Single X Cntrs w/ BCal X + Čer + Luc Cuts



# Single $Y$ Cntrs w/ BCal $Y + \checkmark$ er + Luc Cuts



## Summary

- *Nice correlation between X-Y and BigCal coordinates.*
- *Čerenkov + Lucite TDC conditions enhance Tracker TDC considerably.*
- *Signal : Background  $\sim$  7:1*
- *Single counter timing resolution  $\sim$  3.5 ns.*
- *High rate of low energy background problem for Y1.*