Sr^{90} Beta Source Setup Characterization of Embedded Pitch Adapters

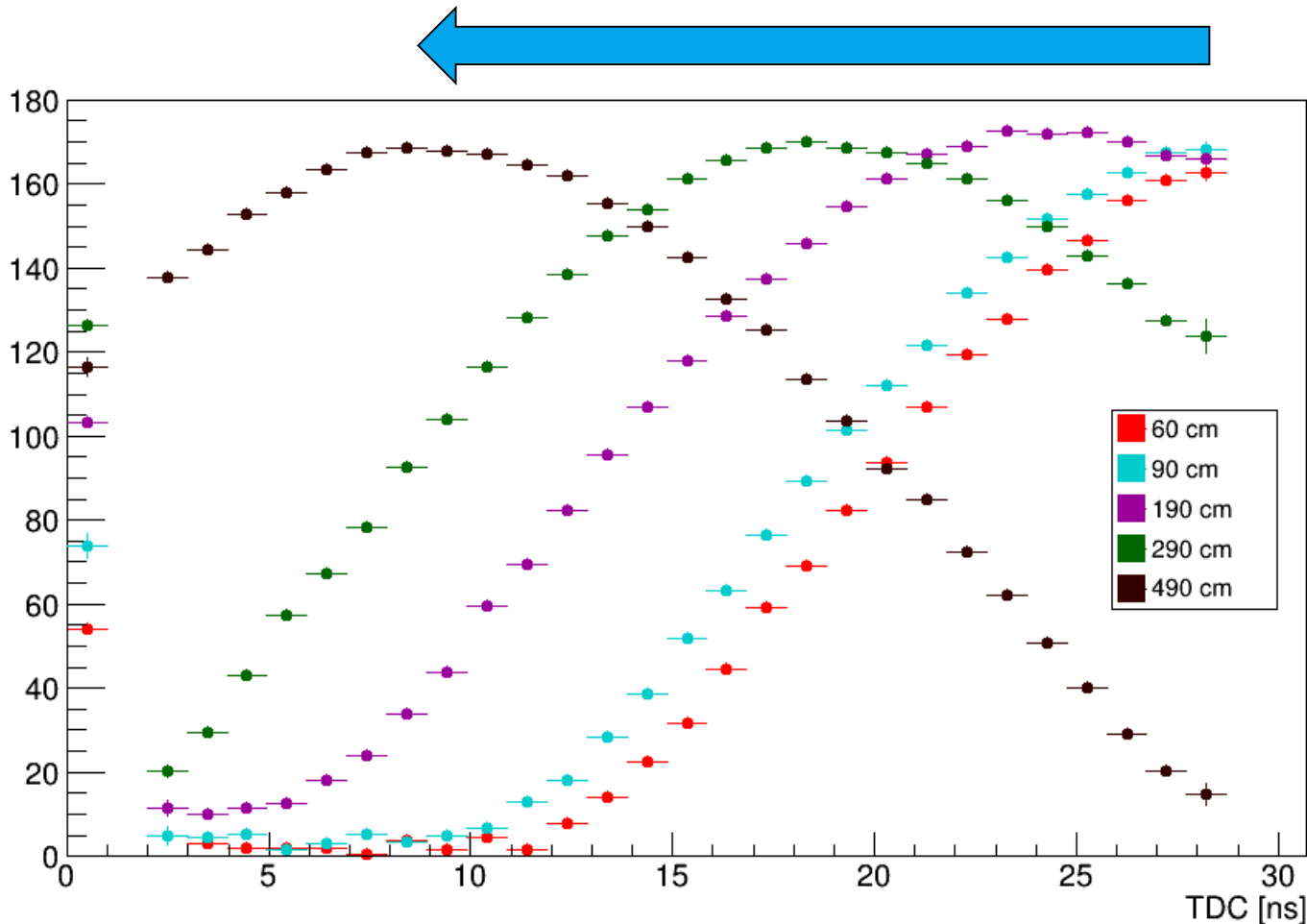**First Results with Unirradiated Sensors**

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DESY Weekly Meeting
1st September 2017
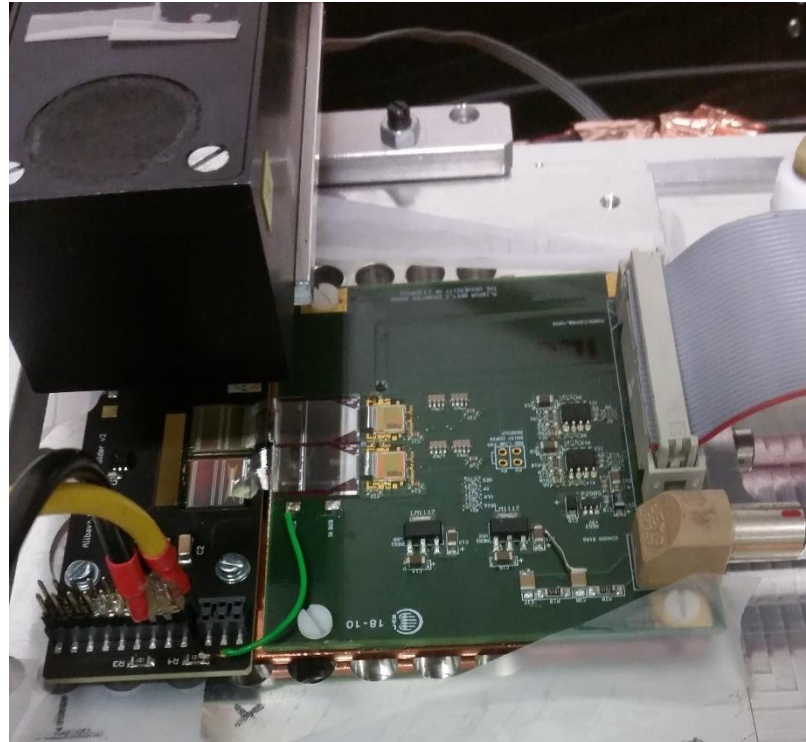
Trigger Cable Test (1)

> Time profiles using different cable lengths -> **OPTIMAL LENGTH 290 cm**

V_{bias}= -200 V

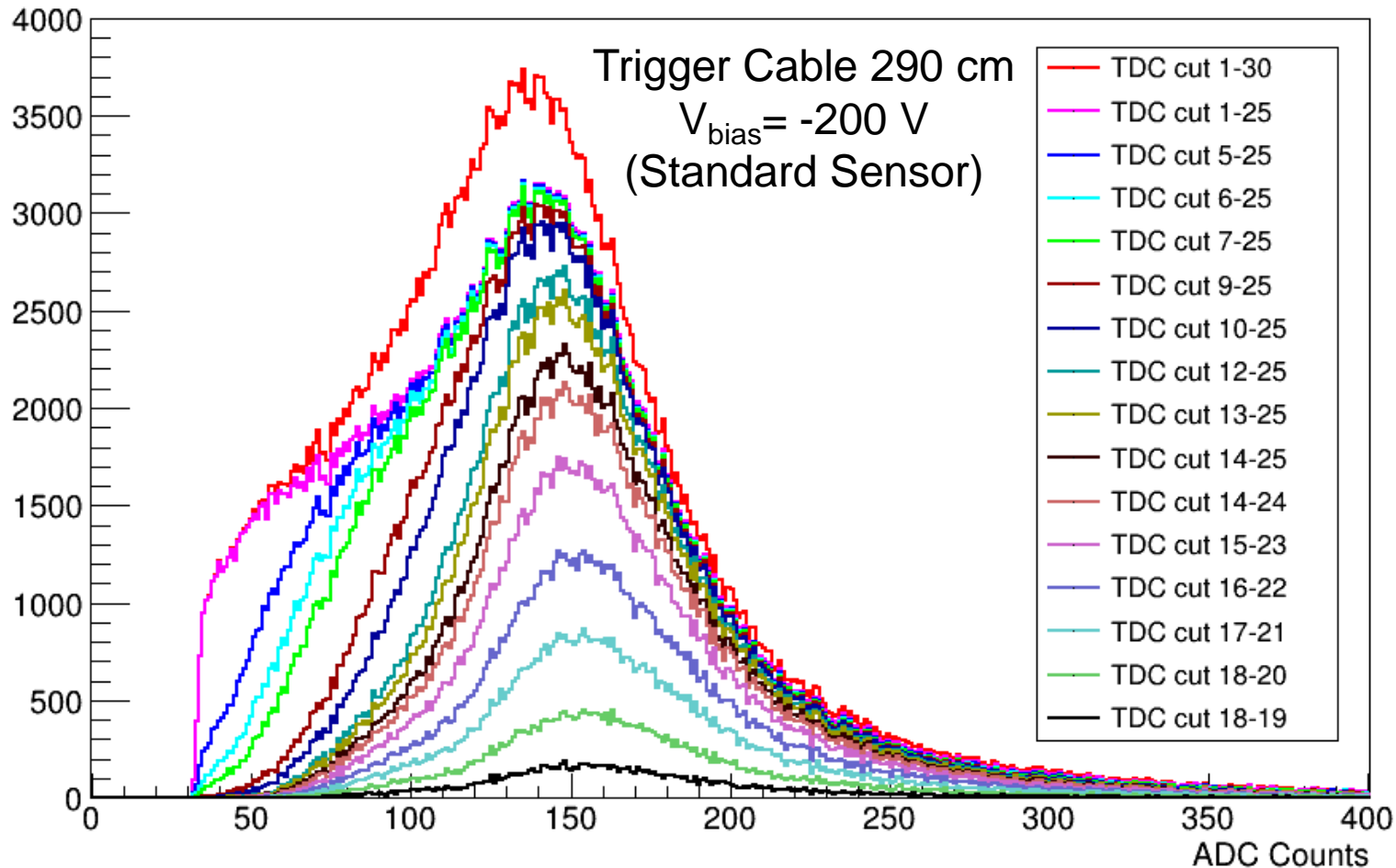| Cable length (cm)	Efficiency (%)
60	50.8
90	56.5
190	76.5
290	**92.9**
490	91.4

Trigger Cable Test (2)

> OPTIMAL LENGTH 290 cm
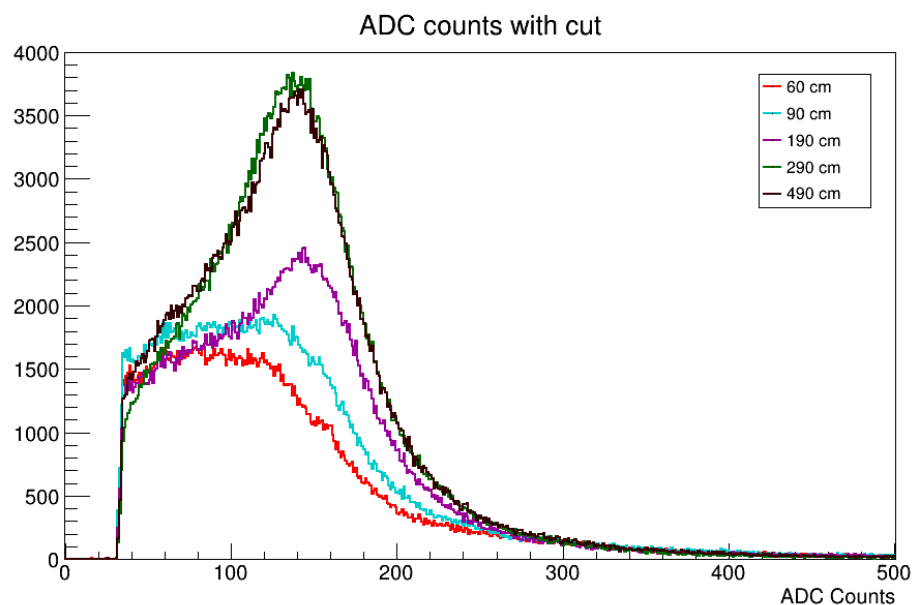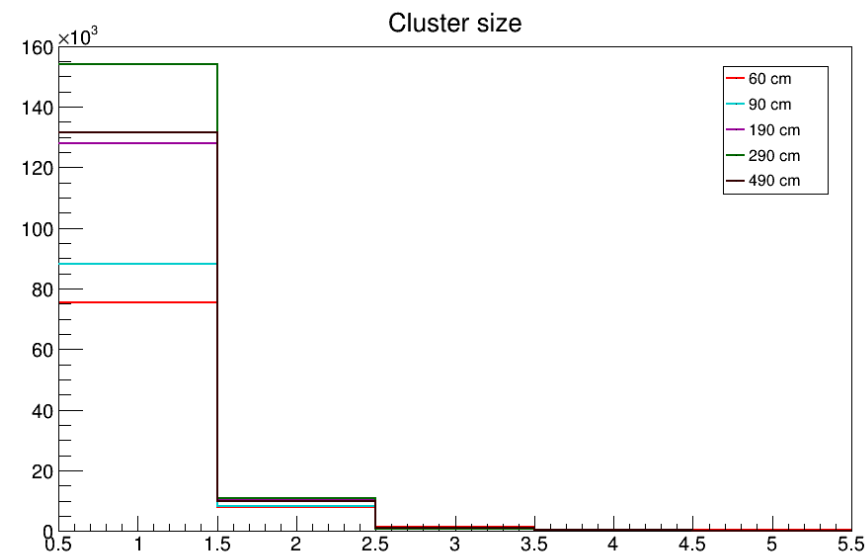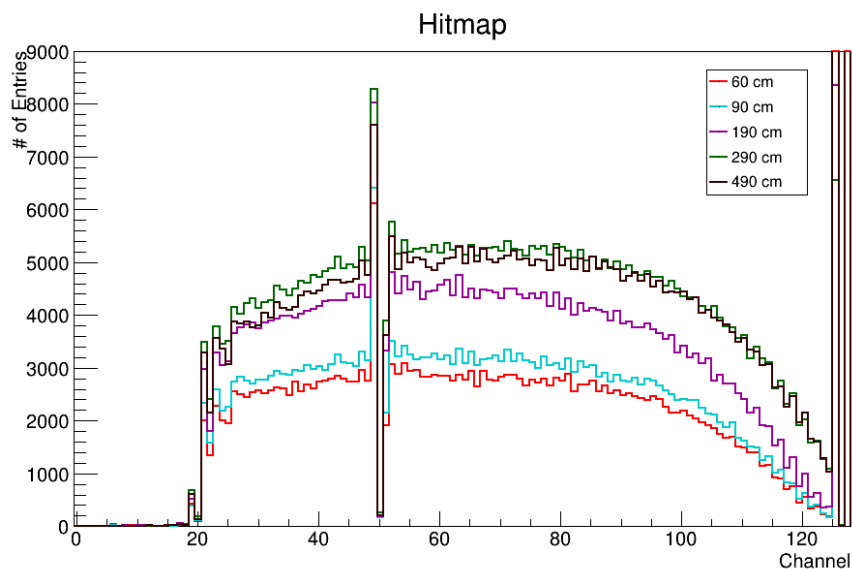
No TDC cut
V_{bias}= -200 V

Time-to-Digital-Converter (TDC) Cut Test

> **OPTIMAL TDC cut 16-22 ns**

ADC counts depending on time cut

Trigger Cable 290 cm
V_{bias}= -200 V
(Standard Sensor)

Legend:
- TDC cut 1-30
- TDC cut 1-25
- TDC cut 5-25
- TDC cut 6-25
- TDC cut 7-25
- TDC cut 9-25
- TDC cut 10-25
- TDC cut 12-25
- TDC cut 13-25
- TDC cut 14-25
- TDC cut 14-24
- TDC cut 15-23
- TDC cut 16-22
- TDC cut 17-21
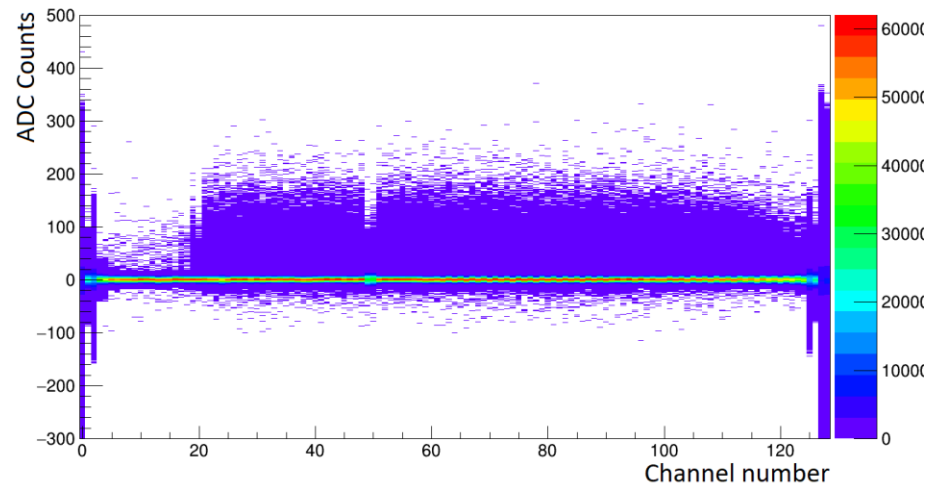- TDC cut 18-20
- TDC cut 18-19

ADC Counts

ALiBaVa Raw Data

> 500k events/sensor

> Pedestal subtraction (200k events) + Common mode noise correction

Trigger Cable 290 cm
V_{bias}= -200 V

STANDARD SENSOR
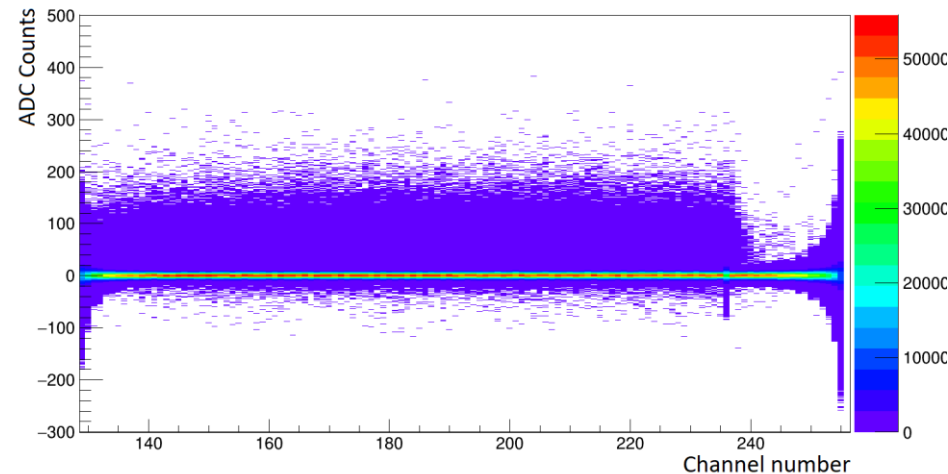

RS data, channel vs. ADC counts

EPA* SENSOR

RS data, channel vs. ADC counts

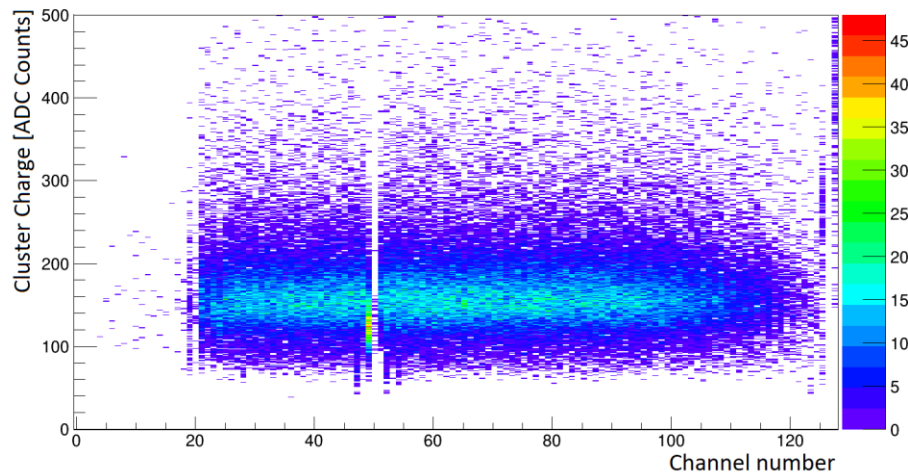(*) EPA = Embedded Pitch Adapter

Cluster Charge

> **Individual strip cluster charge**, reconstructed from 500k events/sensor

STANDARD SENSOR

2D ADC counts with cut (uncalib)

EPA* SENSOR

2D ADC counts with cut (uncalib)

(*) EPA = Embedded Pitch Adapter
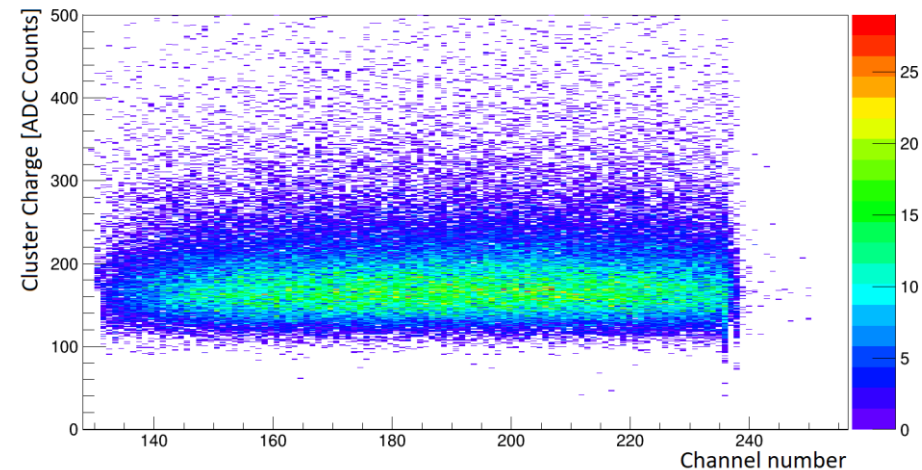
Hitmap
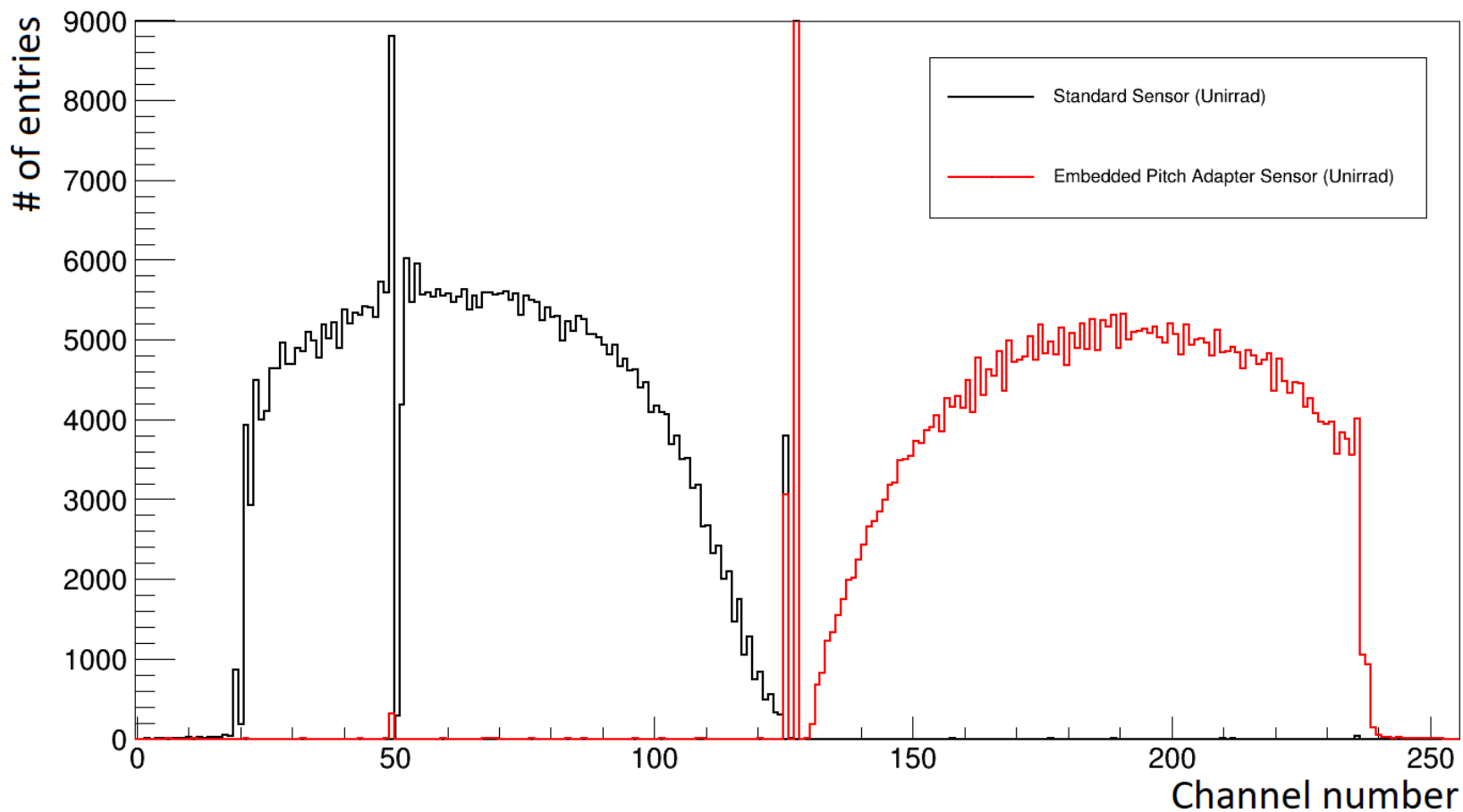
> Cluster charges reconstructed from 500k events/sensor collected for the **whole sensor**

500k events/sensor
Trigger Cable 290 cm
TDC cut 16-22 ns
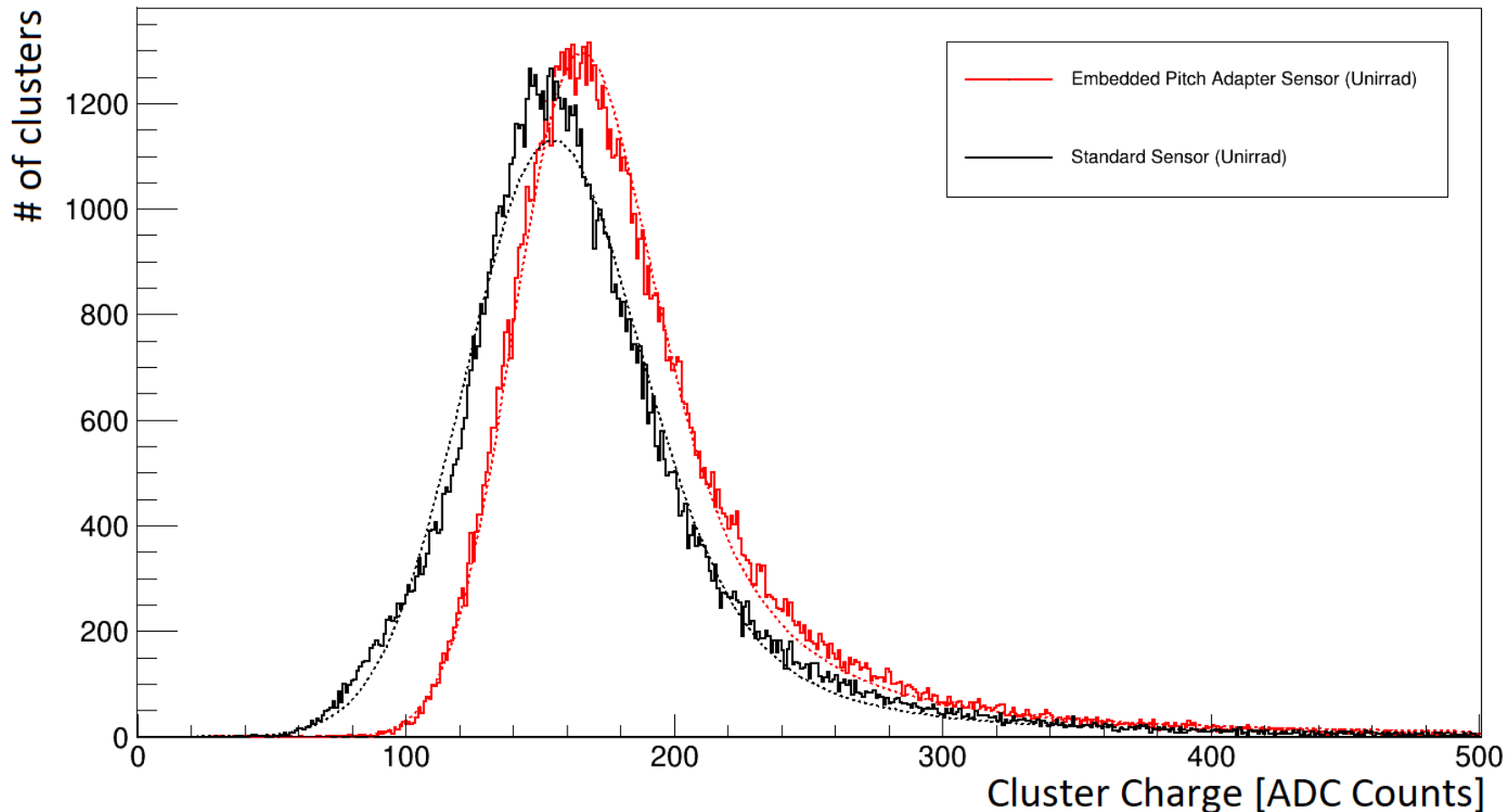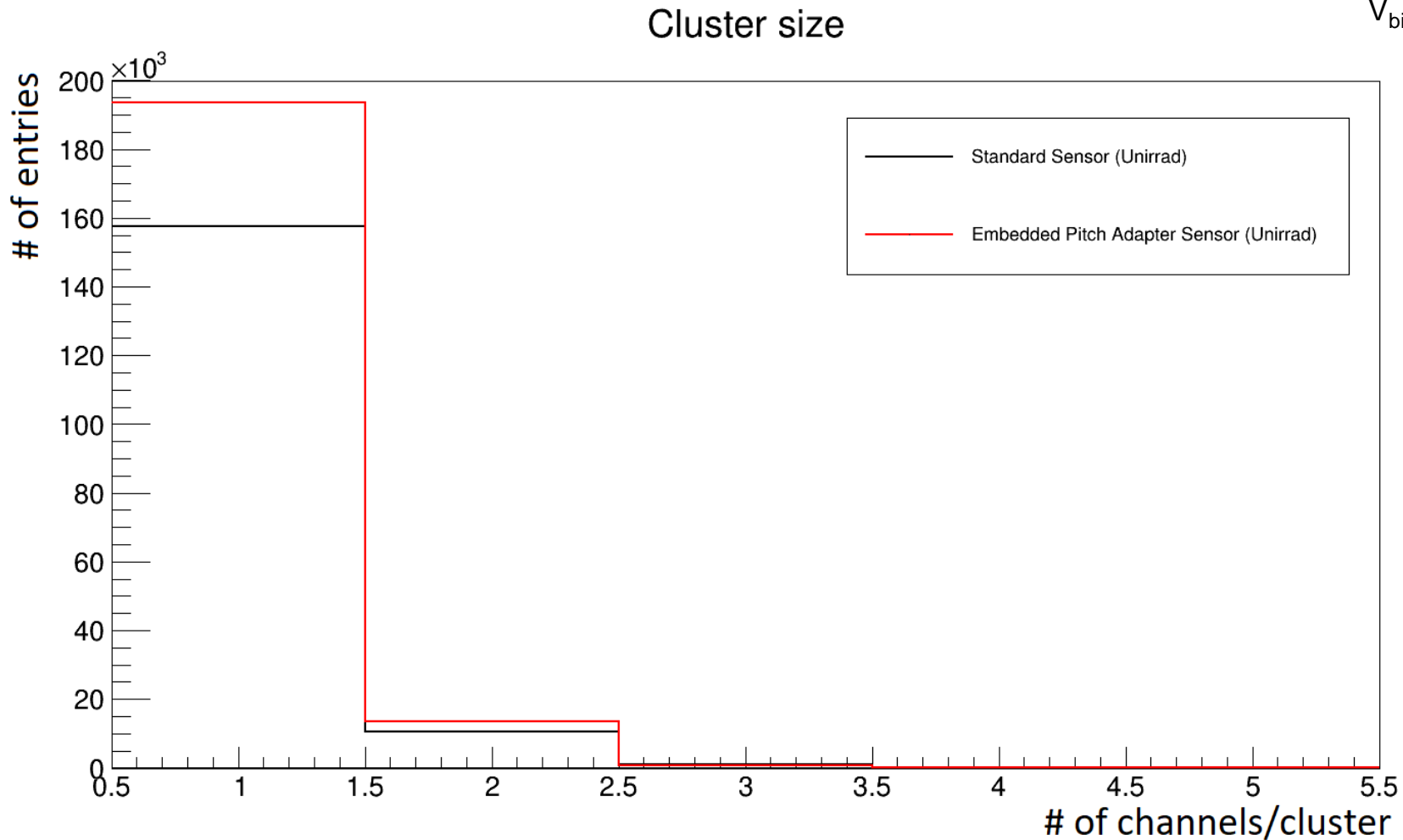V_{bias}= -200 V

ADC counts with cut

Cluster Size

500k events/sensor
Trigger Cable 290 cm
TDC cut 16-22 ns
V_{bias}= -200 V

Cluster size

Standard Sensor (Unirrad)

Embedded Pitch Adapter Sensor (Unirrad)

# of entries

# of channels/cluster

> Sensor with Embedded Pitch Adapter showing an increase of ~15% (**Why?**)

500k events/sensor·bias
Trigger Cable 290 cm
TDC cut 16-22 ns

CCE Curve