

# TDC Vs ADC

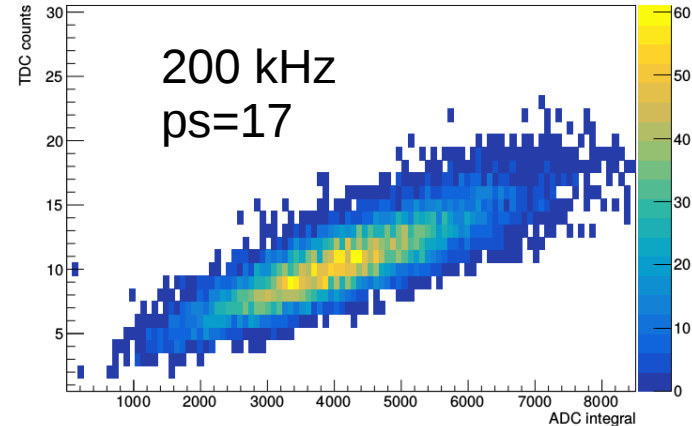
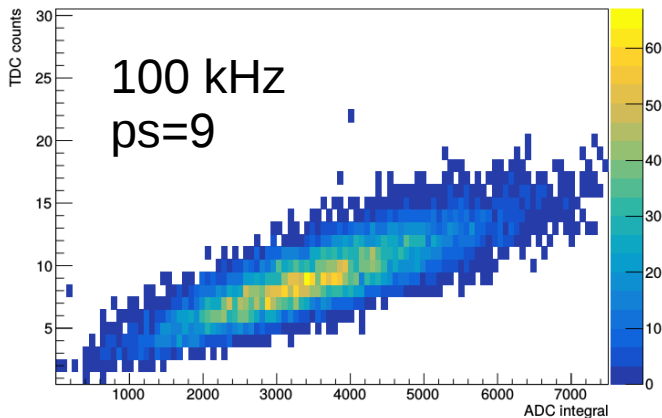
## Benchtest data

### FADC signal vs TDC counts

#### At different LED rates

### Goal:

- Try to understand the MAROC readout at high rate 200 kHz/pixel (SoLID background)
- CLAS 12 RICH tested max. up to 2kHz/pixel
- Try to understand MAROC readout with LED/Laser/Cosmic
- Test the linearity between MAROC and FADC sum readout



PMT	Rate 20 ps=2	Rate 100 ps=9	Rate 200 ps =17
<b>1</b>	<b>2.5</b>	<b>14</b>	<b>30</b>
<b>2</b>	<b>2.5</b>	<b>14</b>	<b>30</b>
<b>3</b>	<b>2.5</b>	<b>14</b>	<b>30</b>

- Reached up to 30 kHz/pixel
- Limited by LED heating

- ps: prescale
- Rates in kHz

## Laser bench test MAROC and sum read out

With Laser we aim to reach 200 kHz/pixel

Questions:

- 1) What do we use as a trigger? At this rate coda will have large deadtime. Prescale factor should be very high
- 2) To achieve 200 kHz/pixel
  - a) Tune one pixel at a time in average and run laser at 12 MHz ( $64 \times 200 = 12$  MHz)
  - b) Tune few pixel at a time in average and run laser at lower rate
- 3) If we use 100 kHz LED as signal and Laser (200 kHz/pixel) as background. How to analyze data to confirm our electronics are performing at high rate environment