

Time Performances of the SiPM Prototype

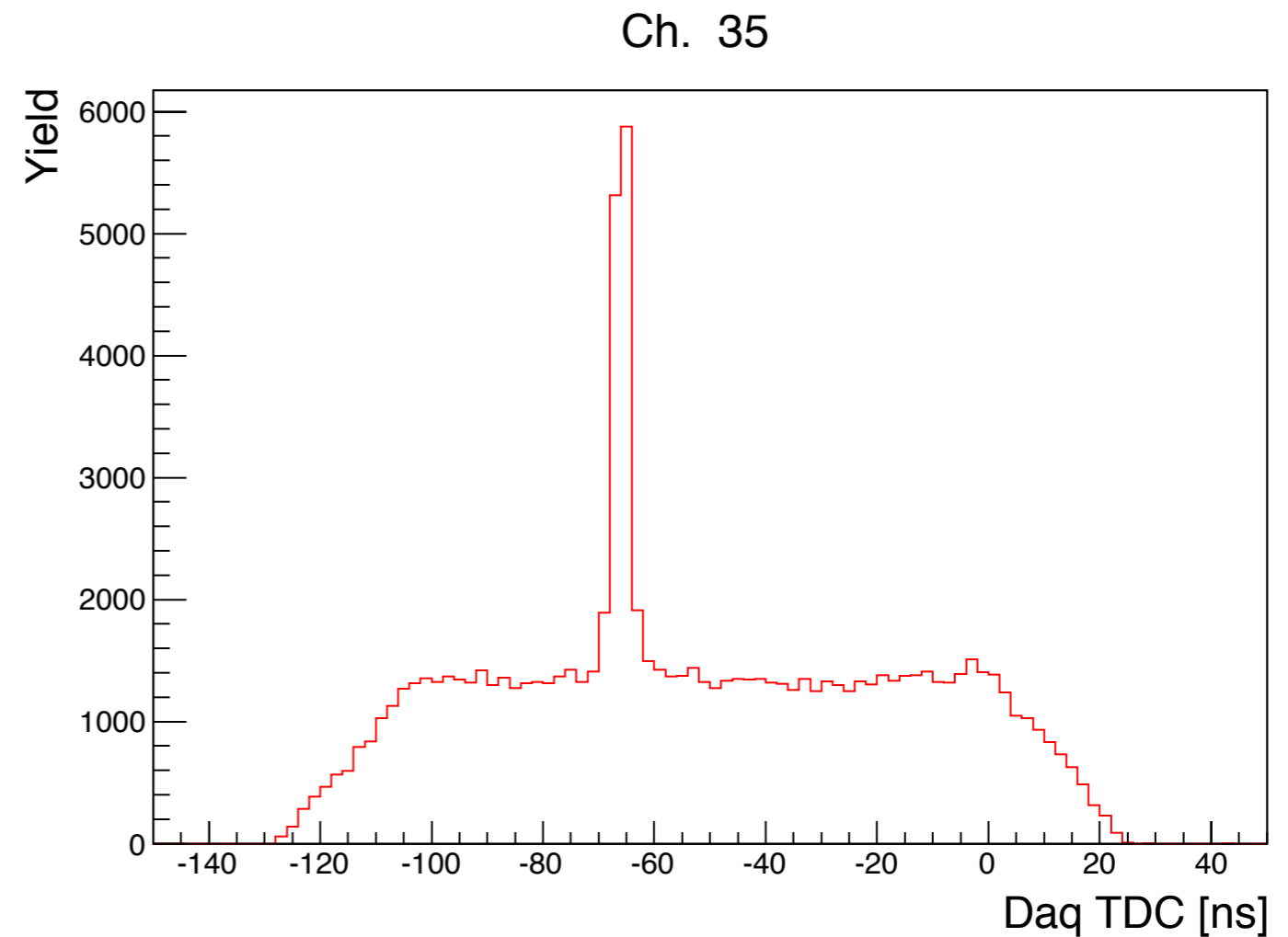
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INFN Ferrara

RICH Meeting
05.03.2014

Test beam studies at T9 Dec. 2012

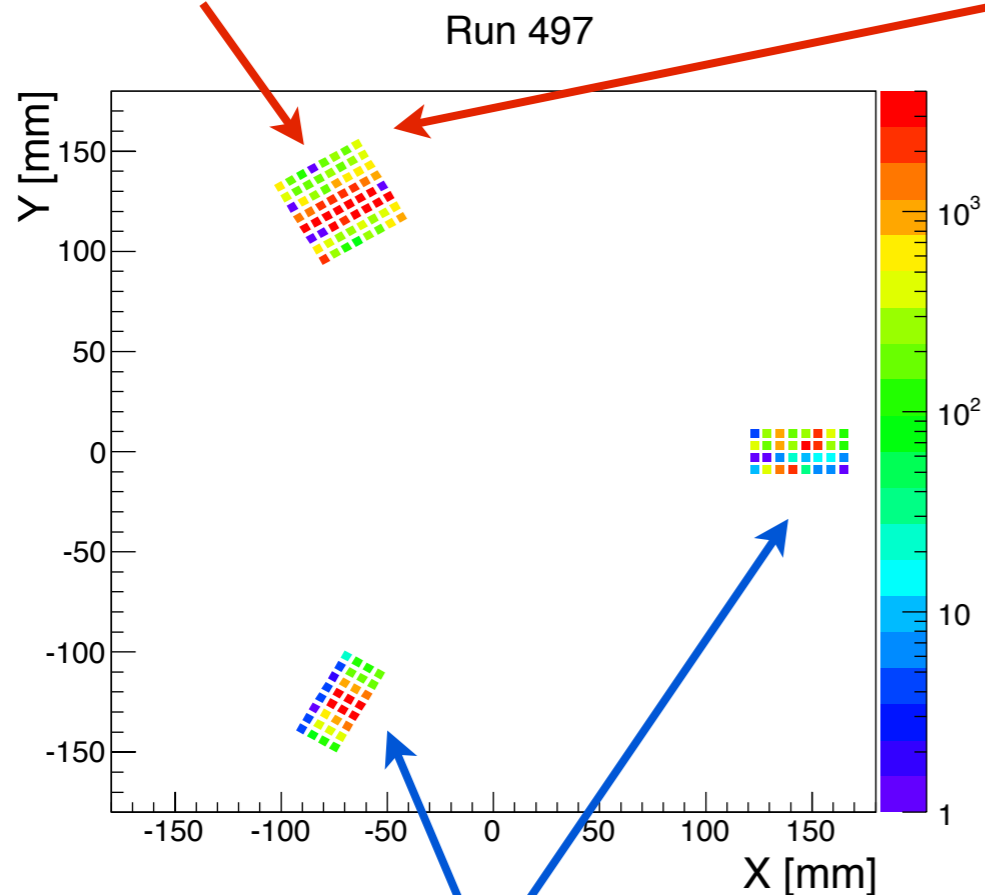
Scan over threshold and Bias voltage

Scans performed at -25 , 0 and +25 °C



3×3 mm² silicon multi-pixel photon counter (MMPC)

Matrix I. Commercial
8×8 MPPC matrix

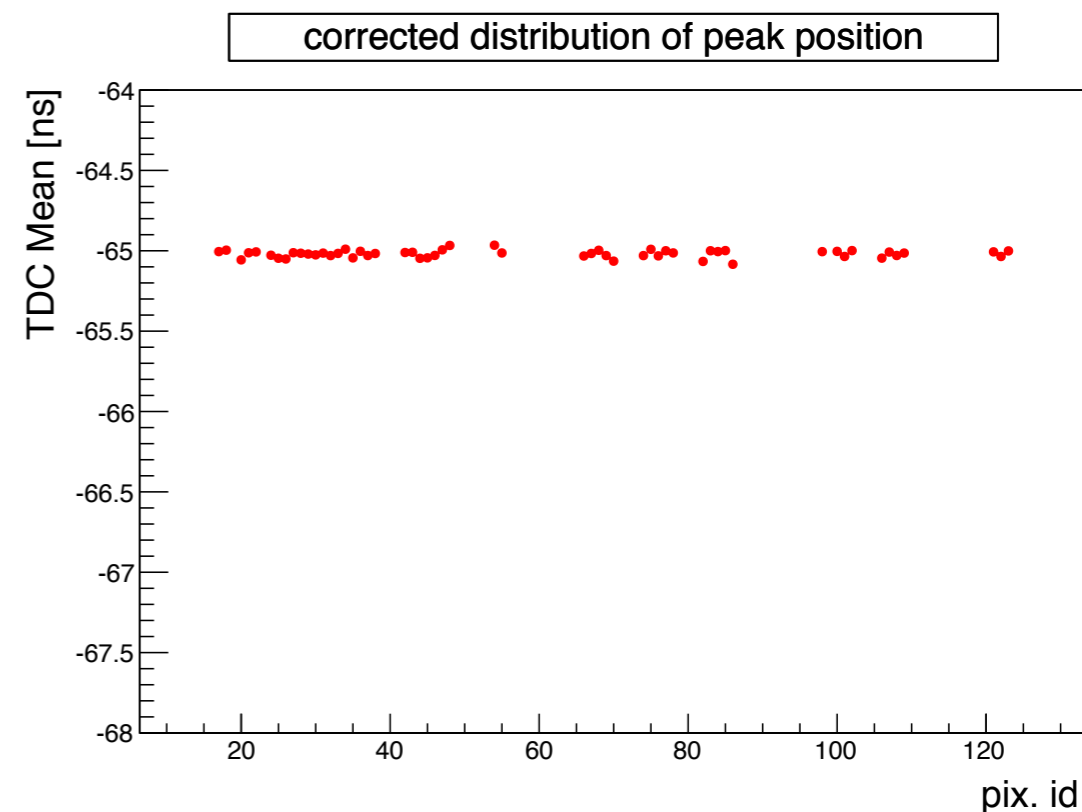
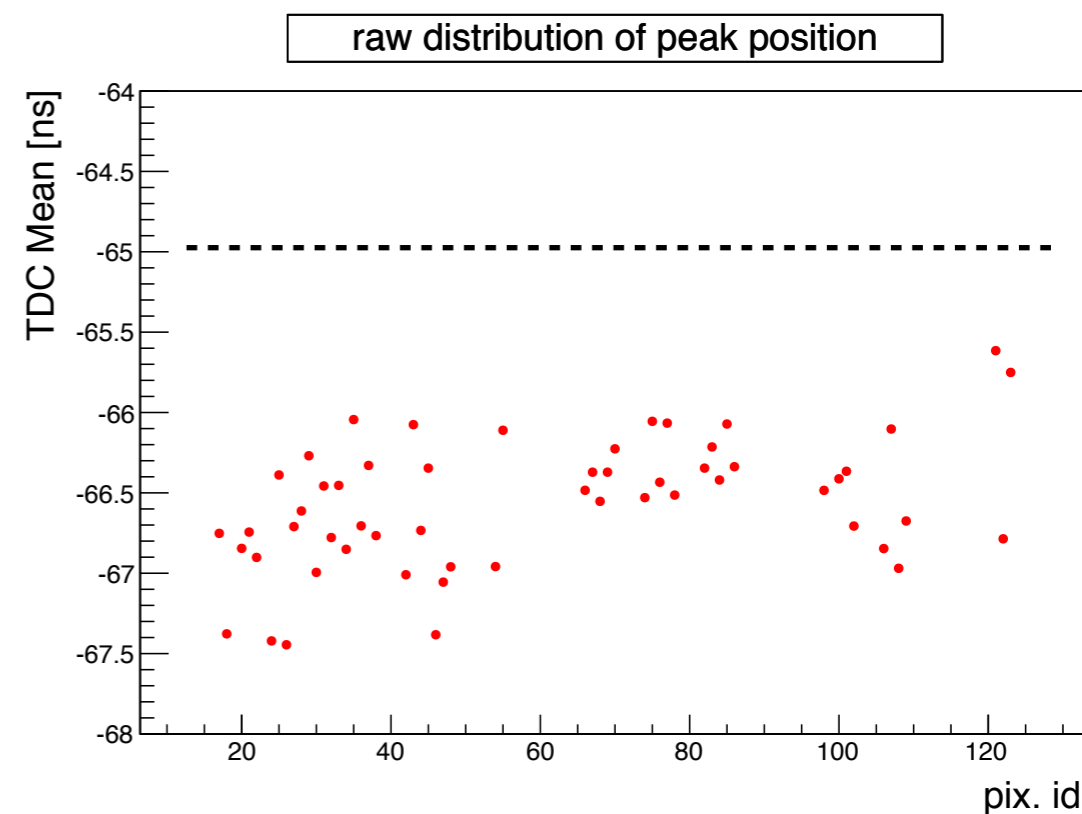
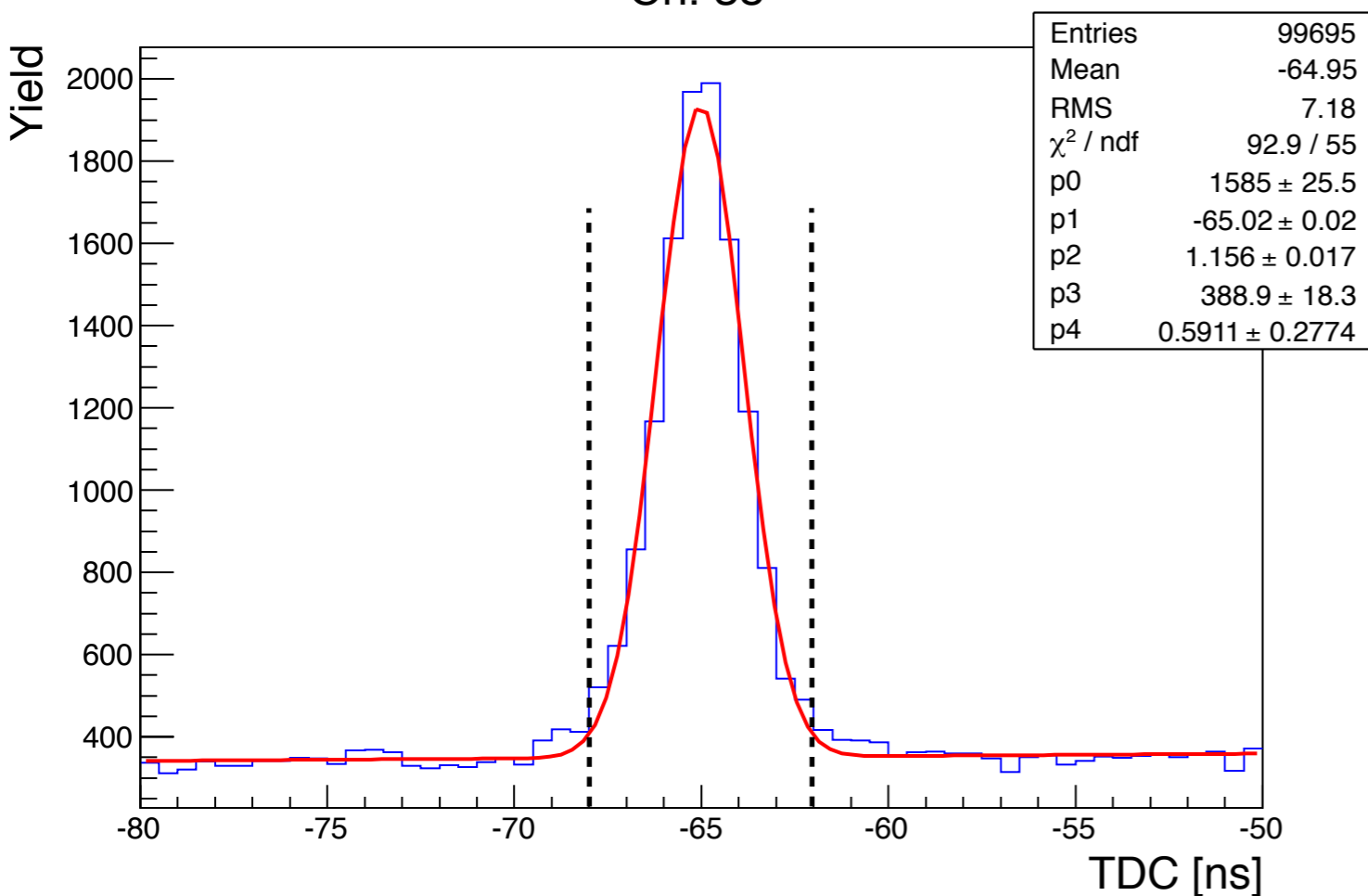


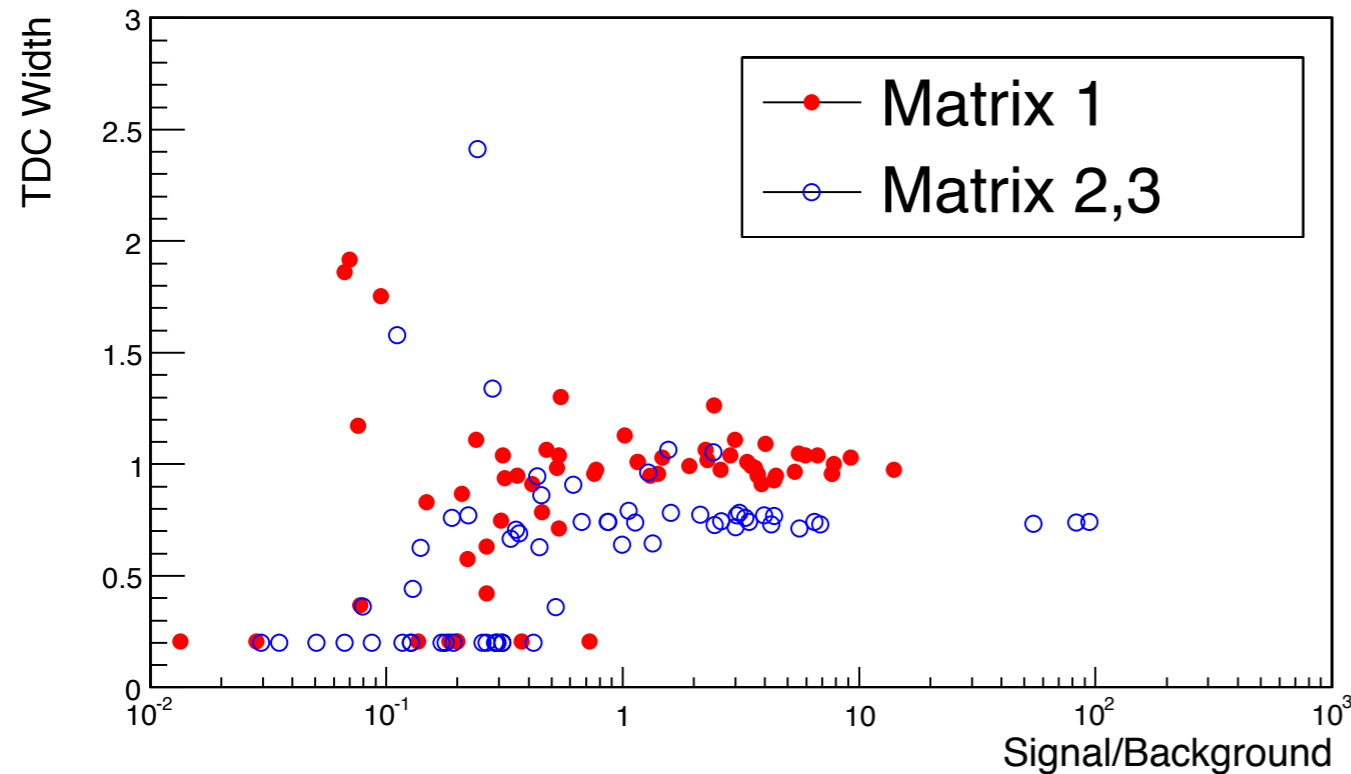
Matrix 2,3. Customized
8×4 MPPC matrix with
pre-amplification stage



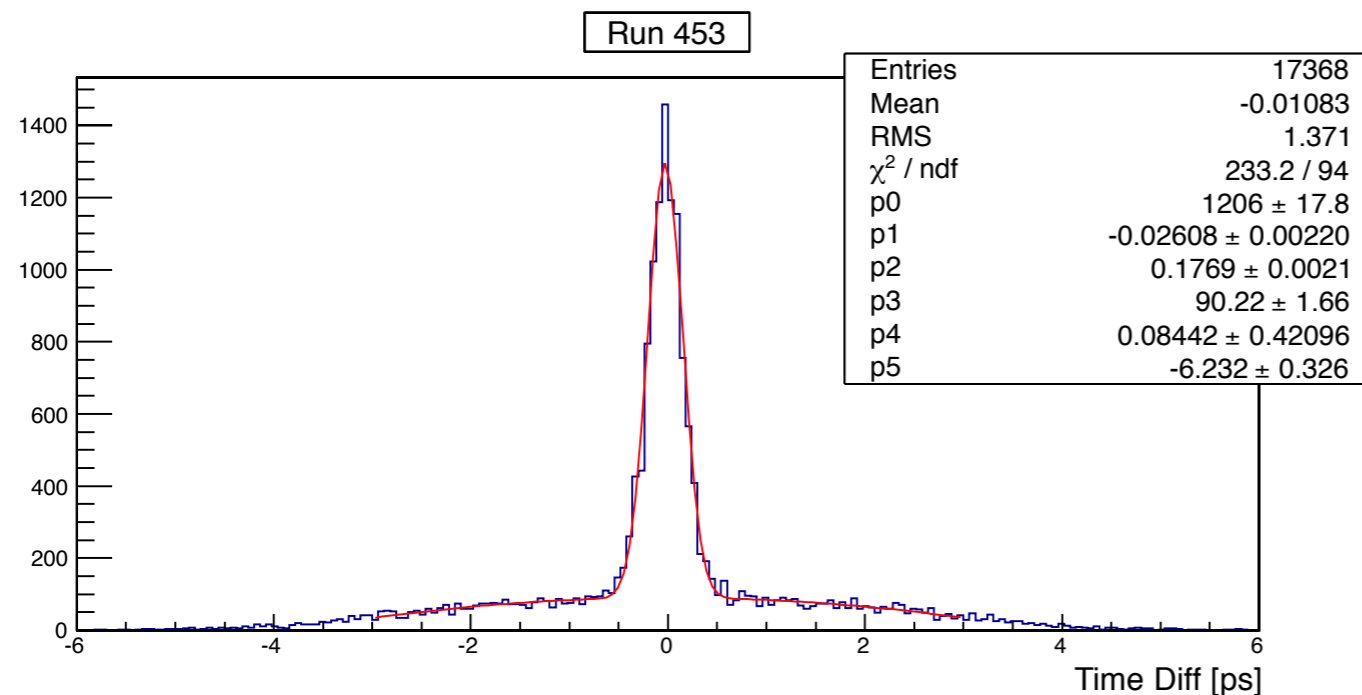
1. Fit the TDC spectra with gaus+pol1
2. Determine the offsets for each pixel
3. Shift the TDC spectra and fit again.
4. Select a 6 ns window
5. Use the fit parameters to determine signal/background ratio.

Ch. 35



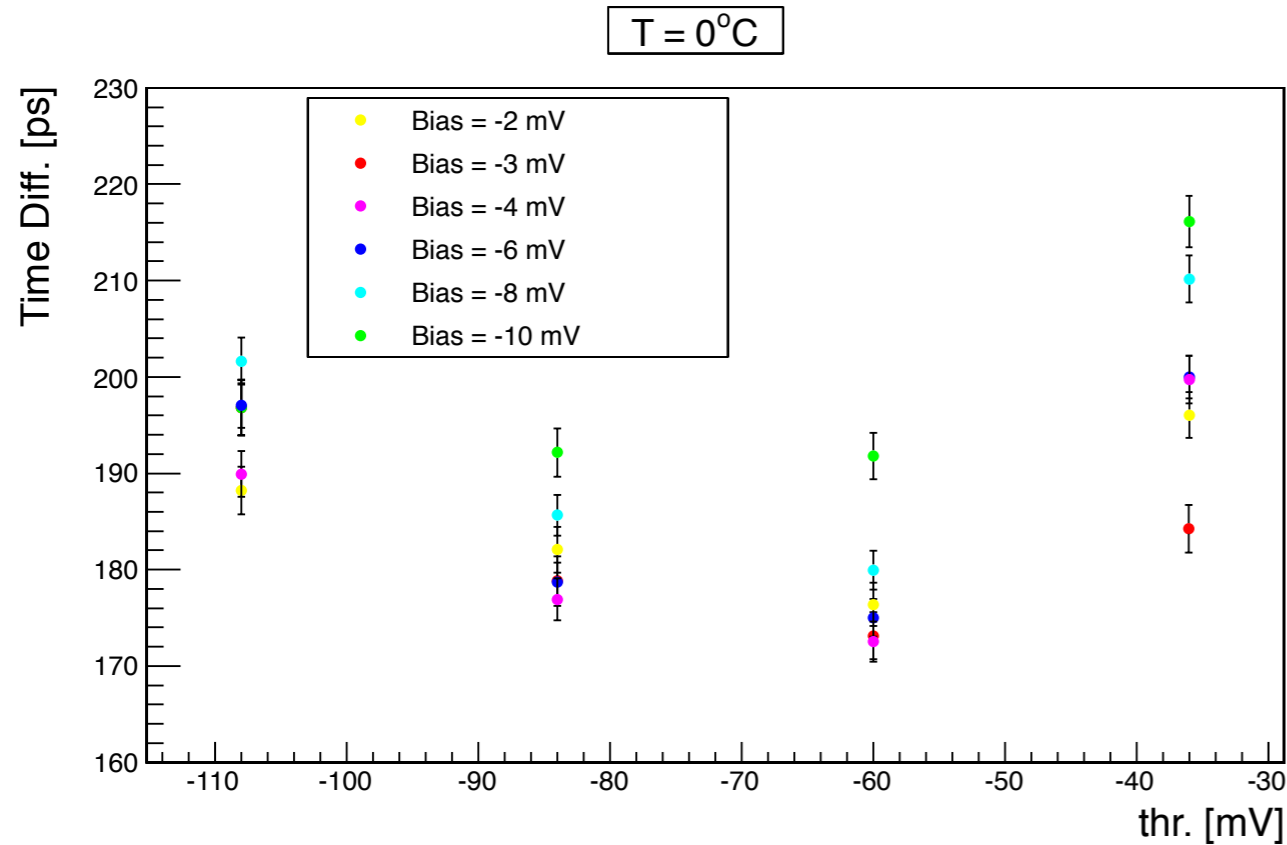


Correlations between signal/background ratio and the widths of the TDC peaks

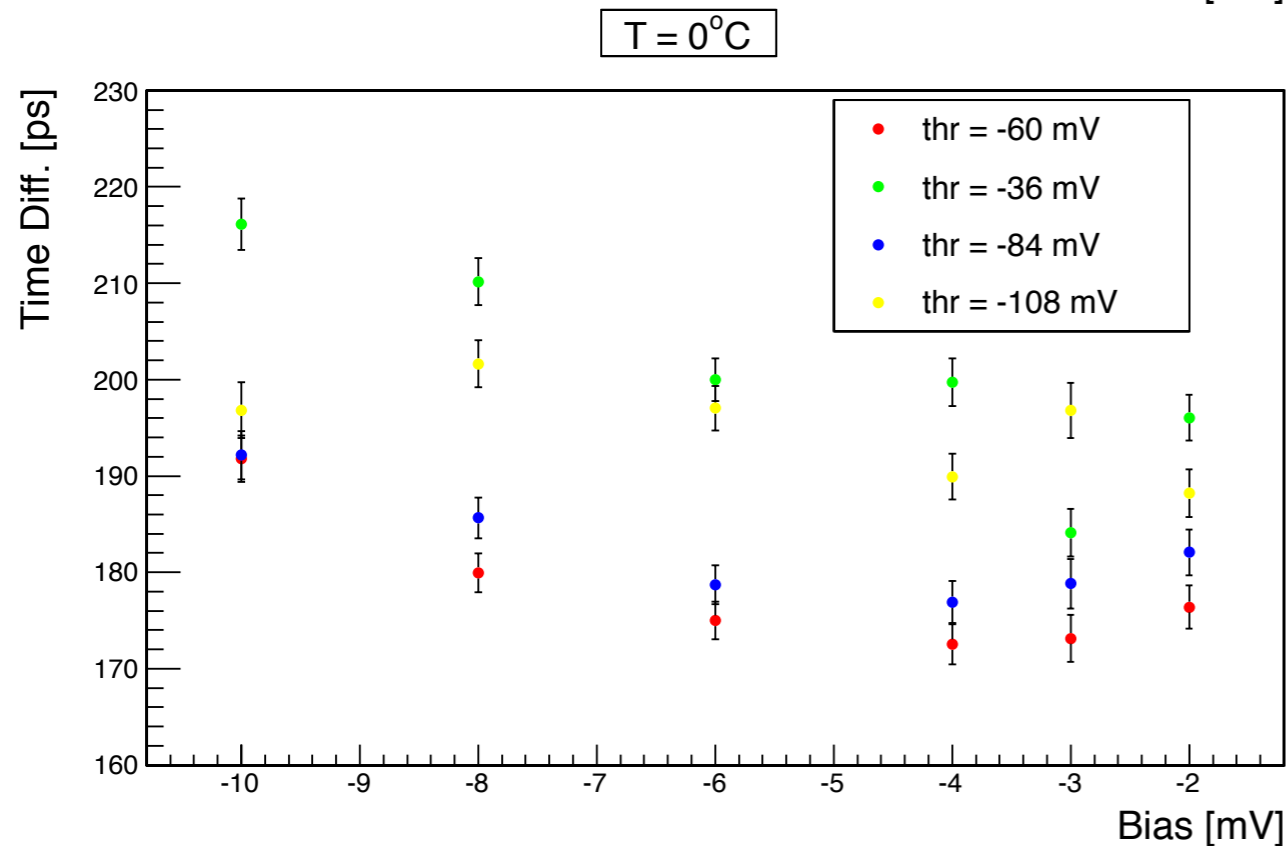


TDC differences of the coincident hits in matrices 2,3.

Dependences on Bias-voltage and threshold

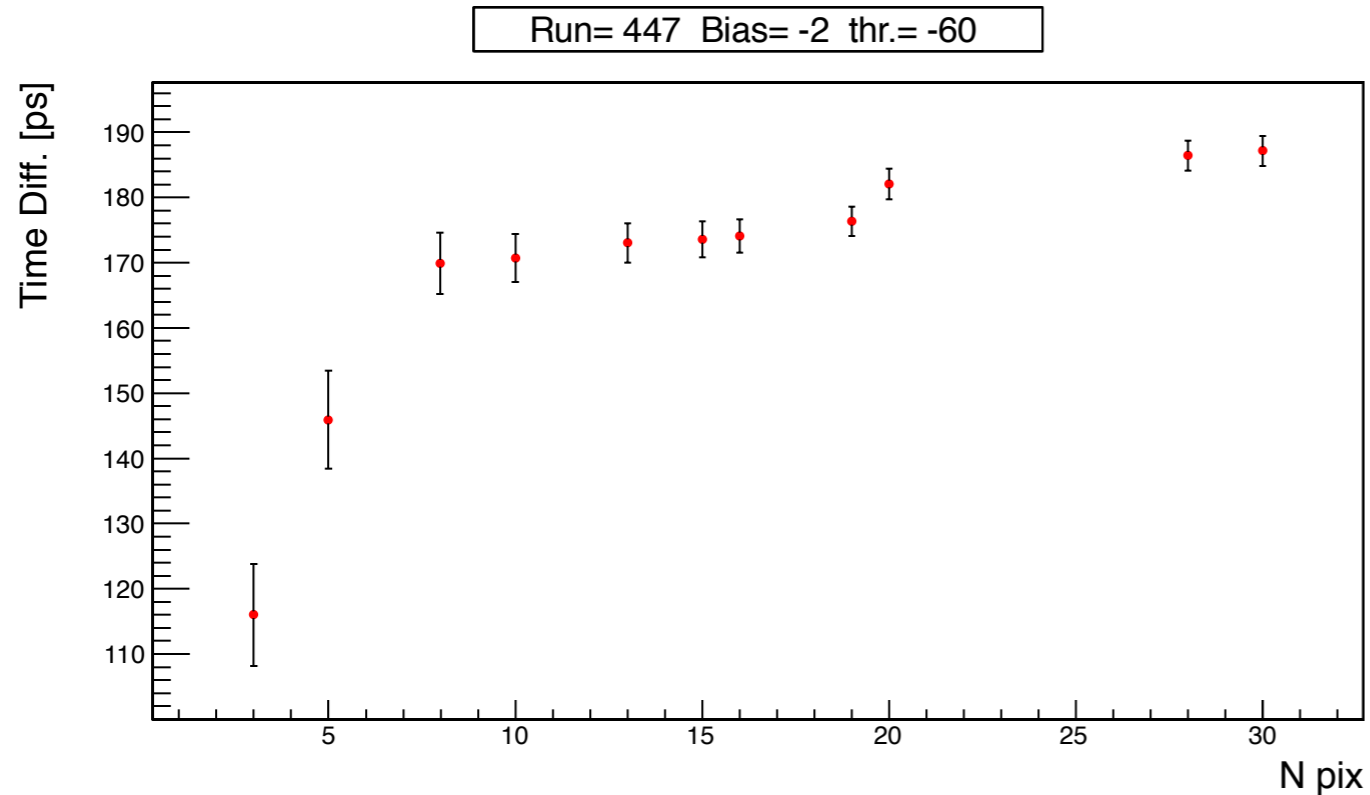


Scan over the thresholds
for different Bias voltages
at 0°C

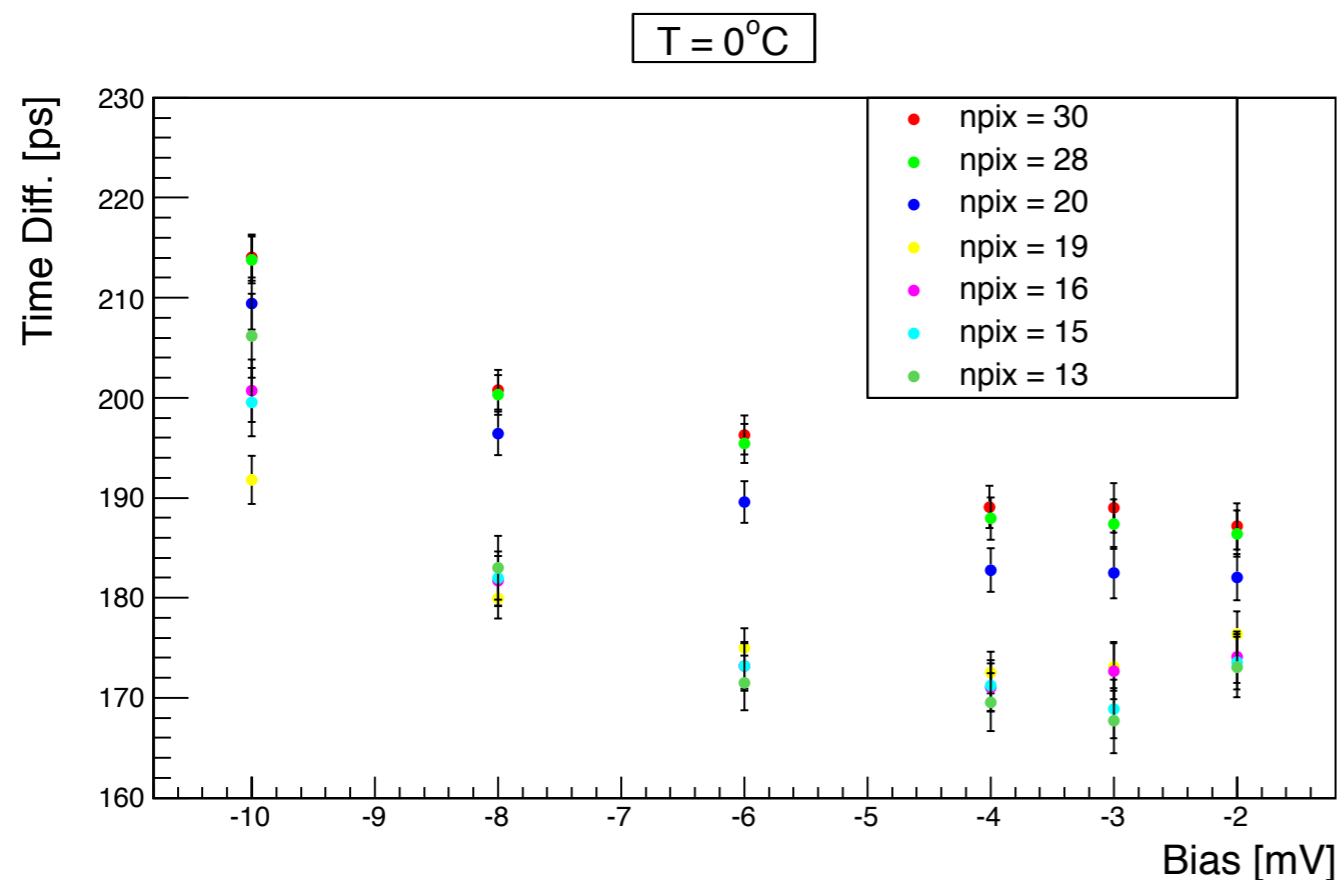


Scan over the Bias voltages
for different thresholds
at 0°C

Dependence on # of pixels



TDC difference versus
of pixels.



Scan over the Bias voltages
for different # of pixels

Time Performance vs Bias

