CBPM 12W triplet gain study

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CBPM meeting: March 17, 2023

Installed module at 12W ([instr elog 2083](#)):
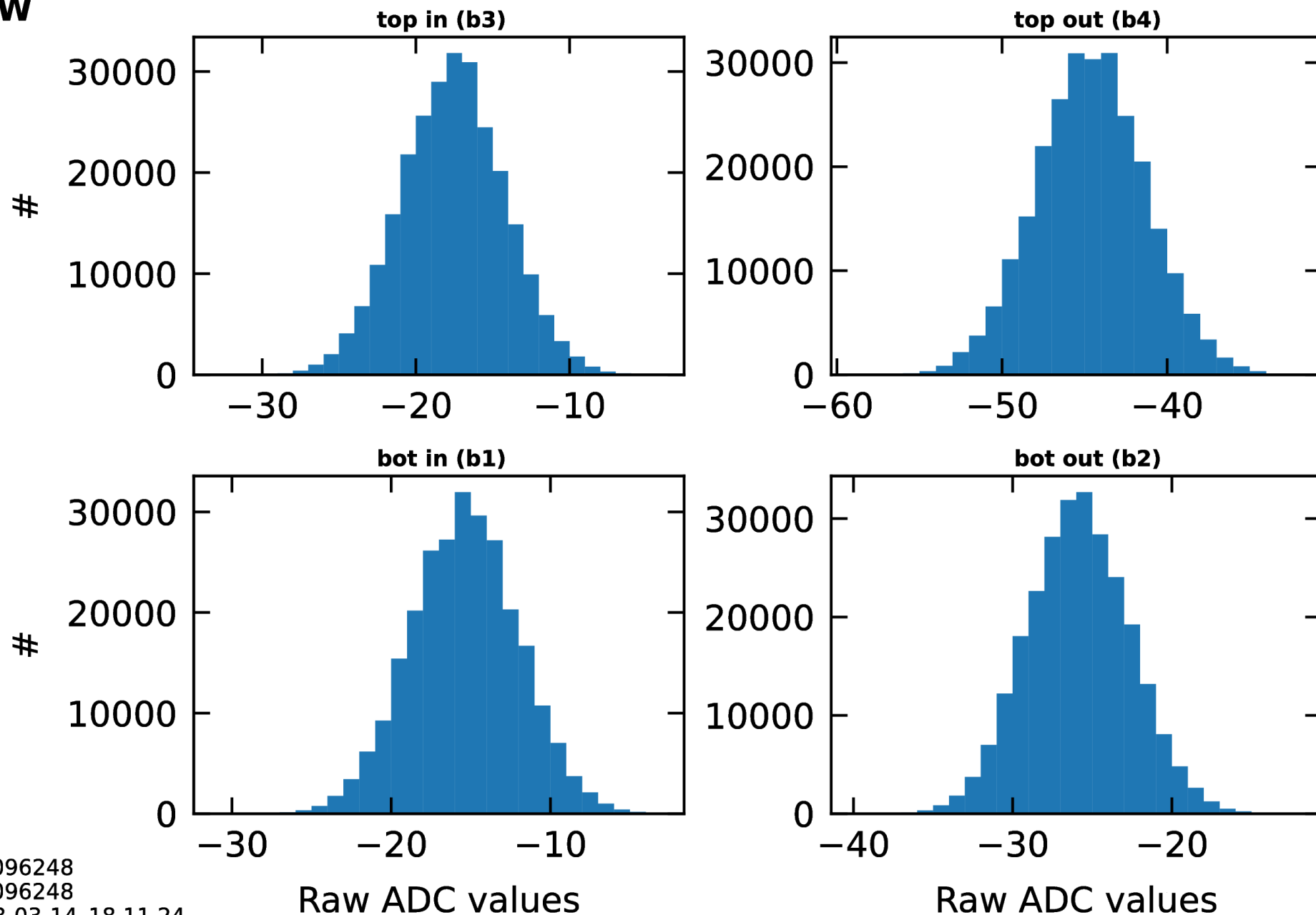
✗ undamaged AFE boards (not deployed, or very little, in the tunnel)

✗ unity gain (amplifier gain resistor removed)

Collected ([instr elog 2085](#)):

✗ pedestal data

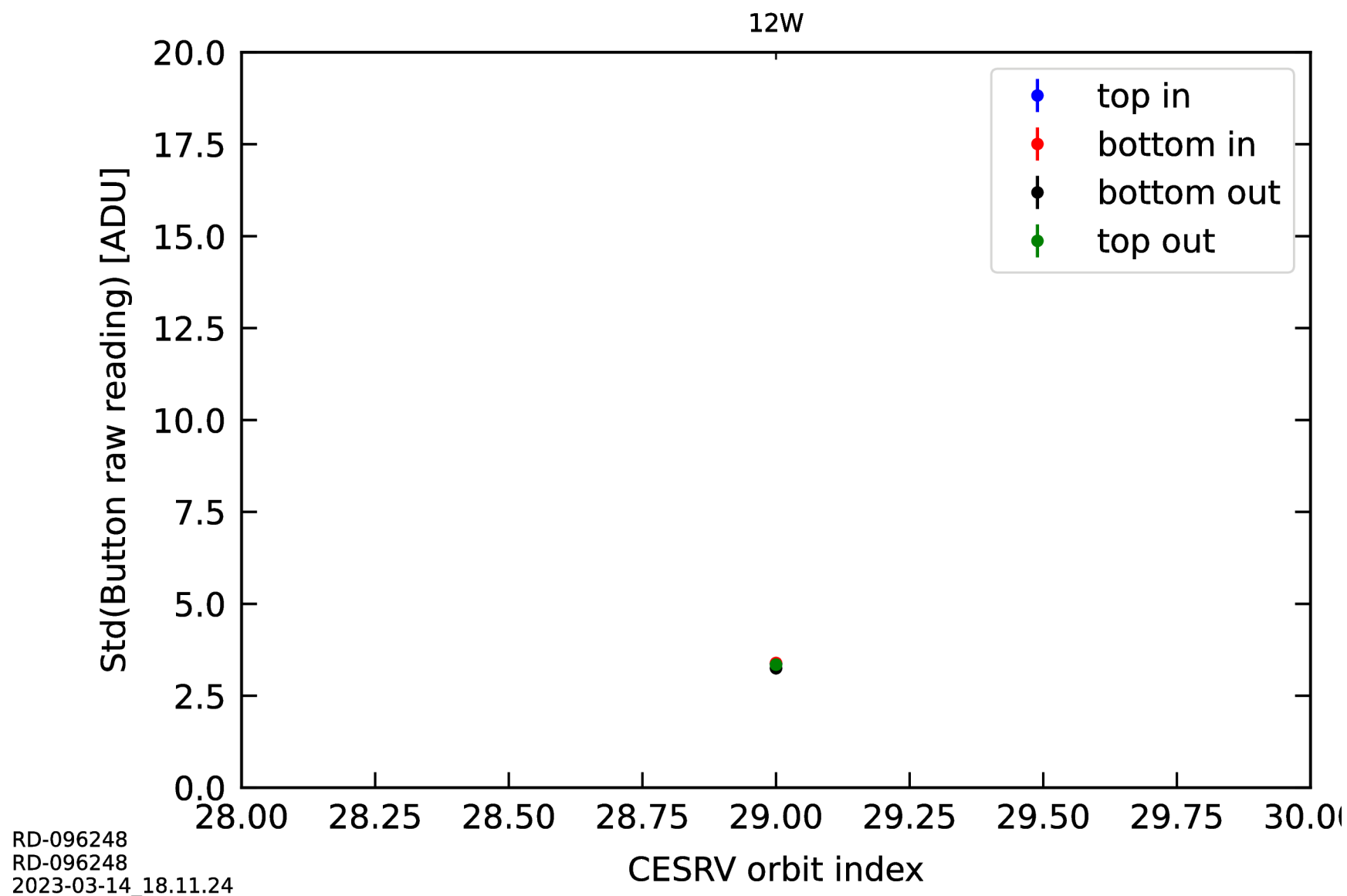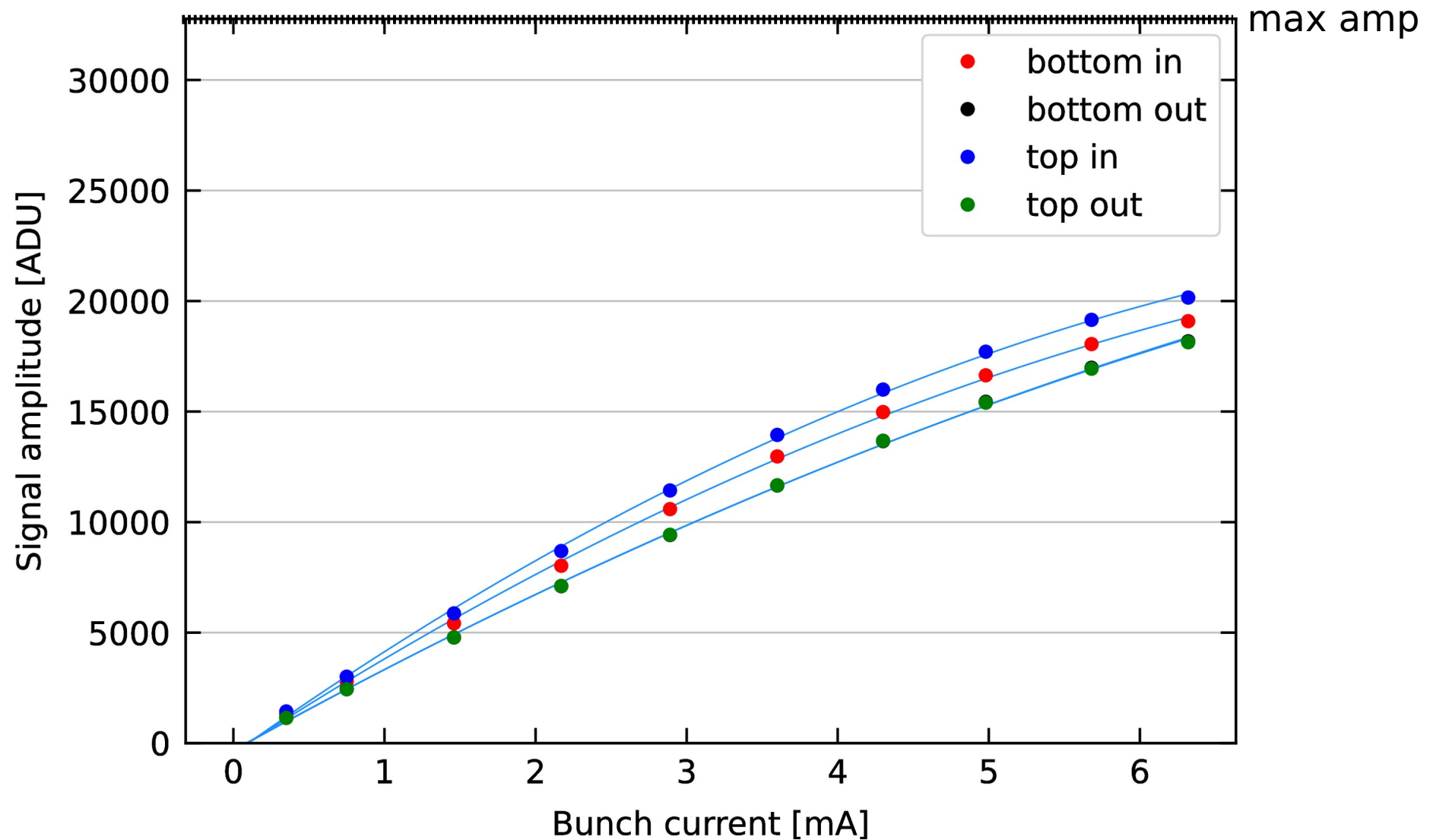✗ bunch current scan data: waveform timed in at every current step

Pedestal data

12W

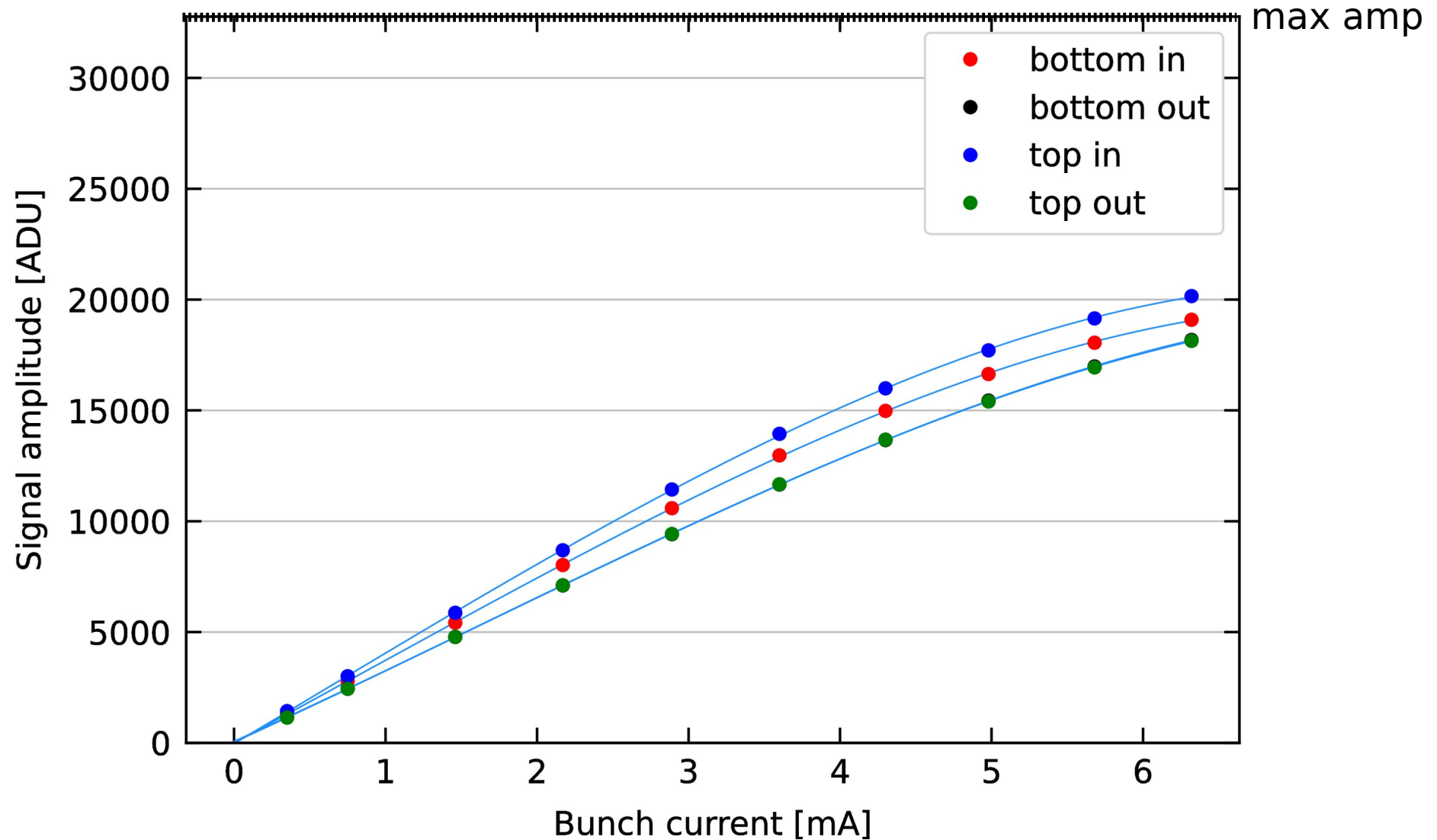RMS noise is about **3.3 ADC count**

Signal amplitude vs bunch current

12W quadratic fit to data (w/o uncertainty)
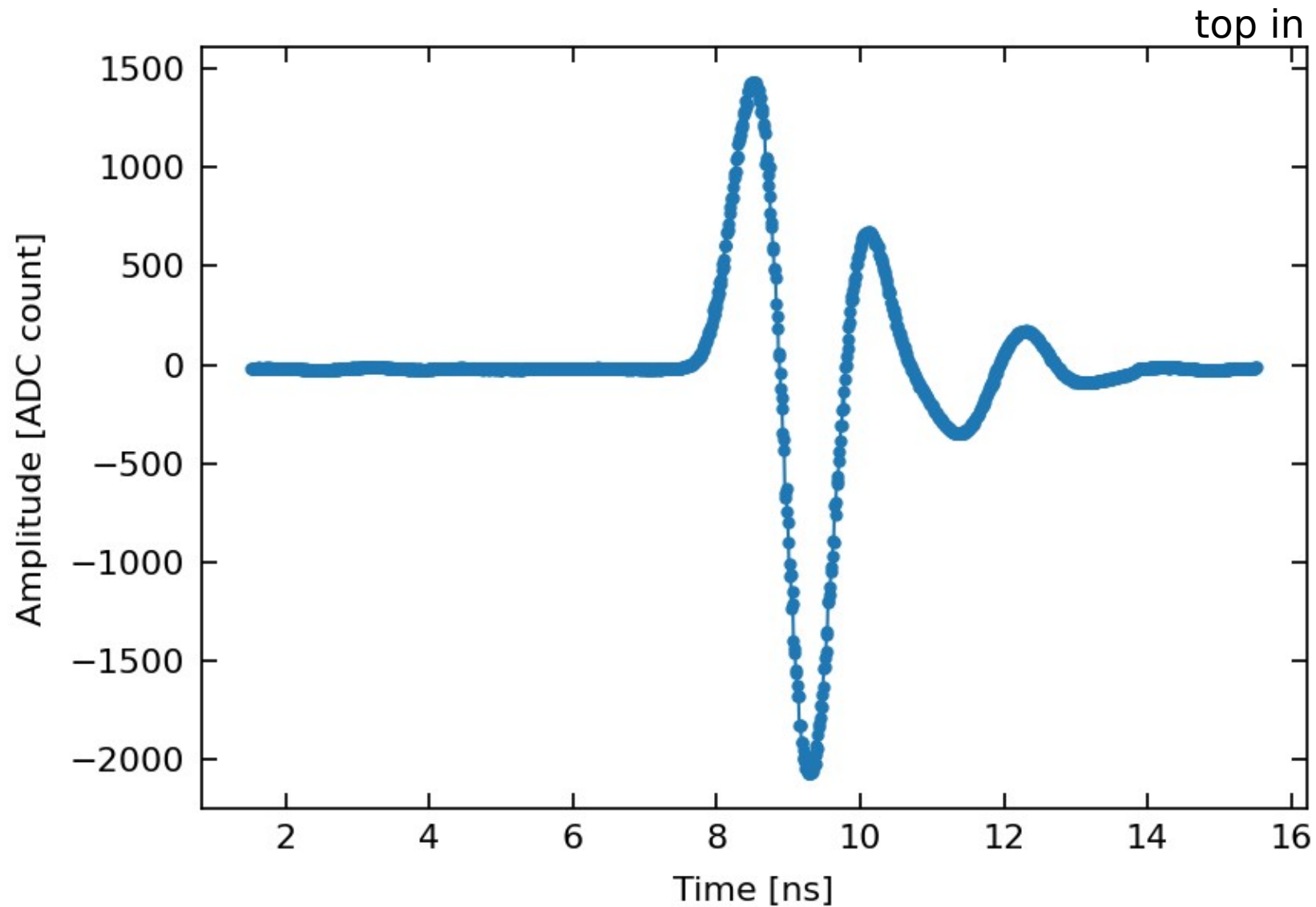
Signal amplitude vs bunch current
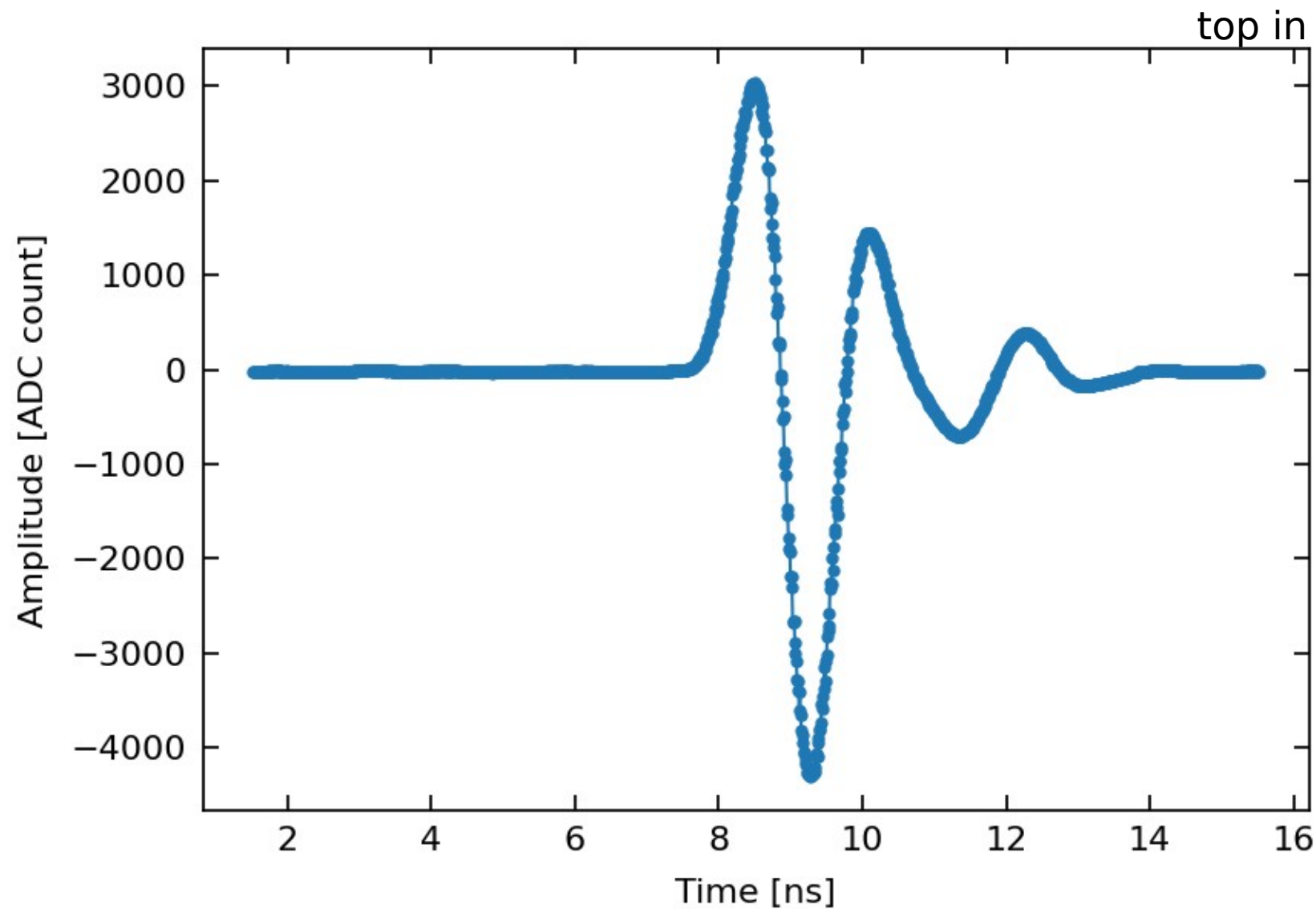
12W __cubic__ fit to data (w/o uncertainty)
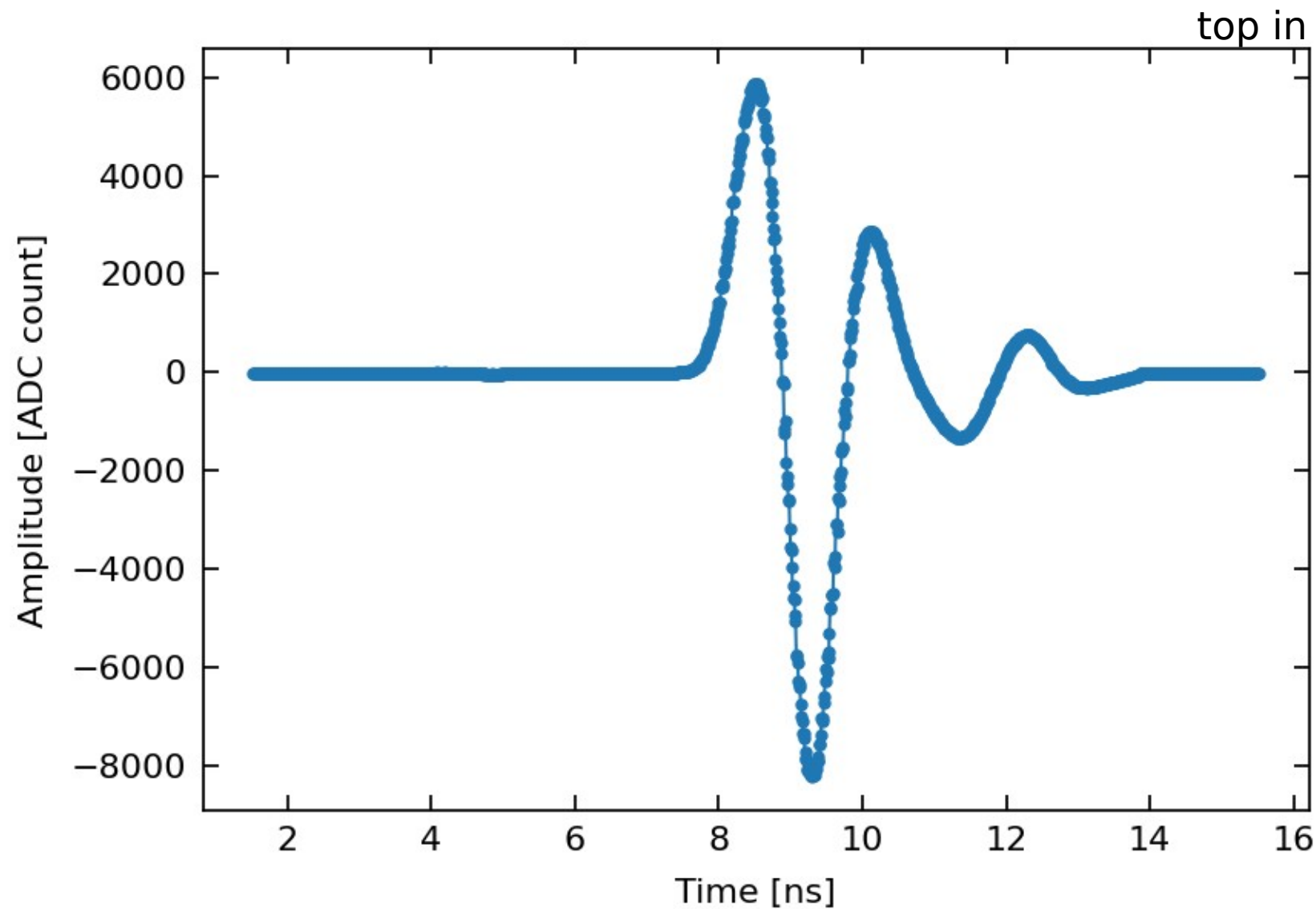
0.35 mA: negative swing **larger** than positive

top in

0.7 mA: negative swing <u>**larger**</u> than positive

top in

1.4 mA: negative swing **<u>larger</u>** than positive

top in

2.1 mA: negative swing **<u>larger</u>** than positive

top in
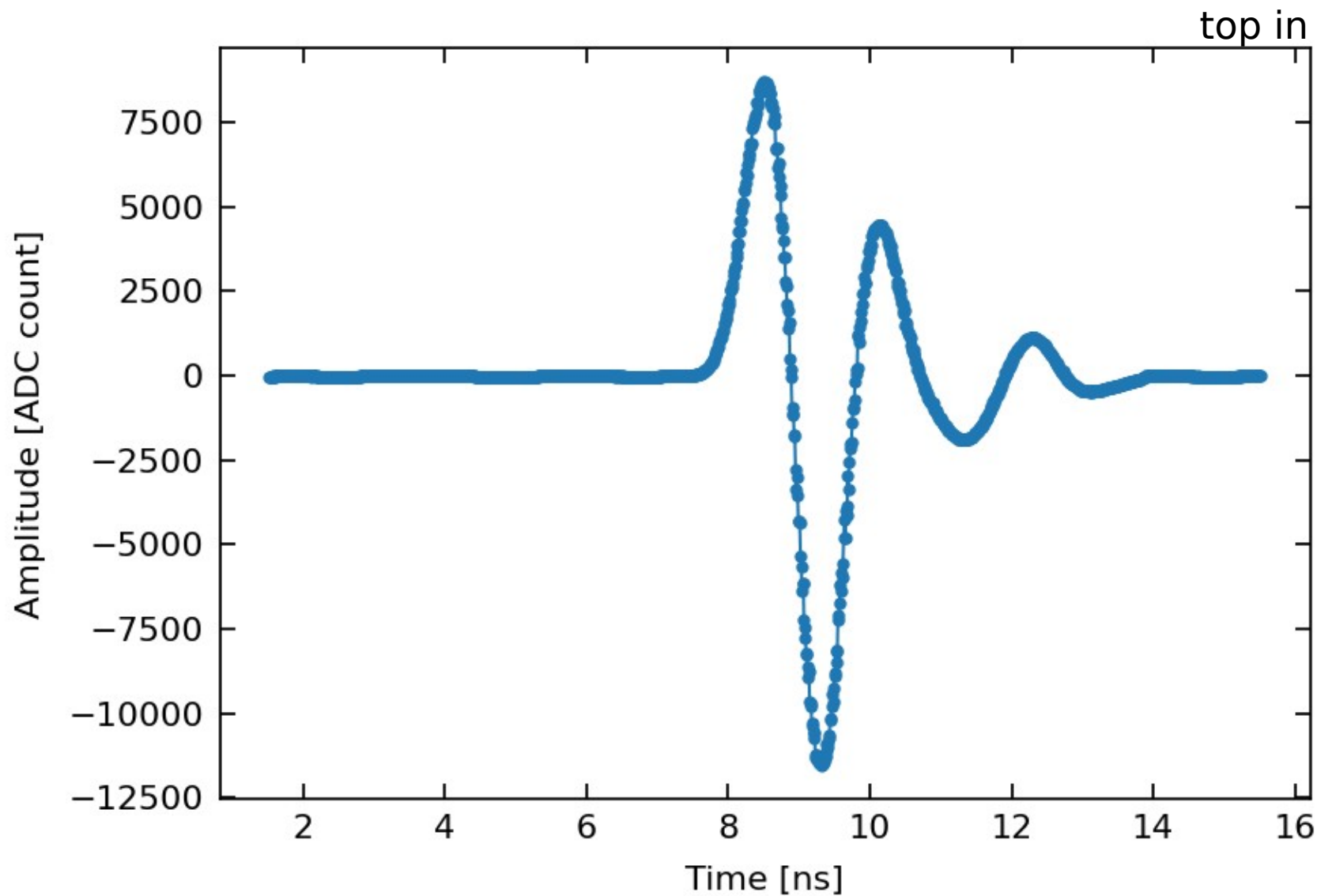
2.8 mA: negative swing <u>**larger**</u> than positive
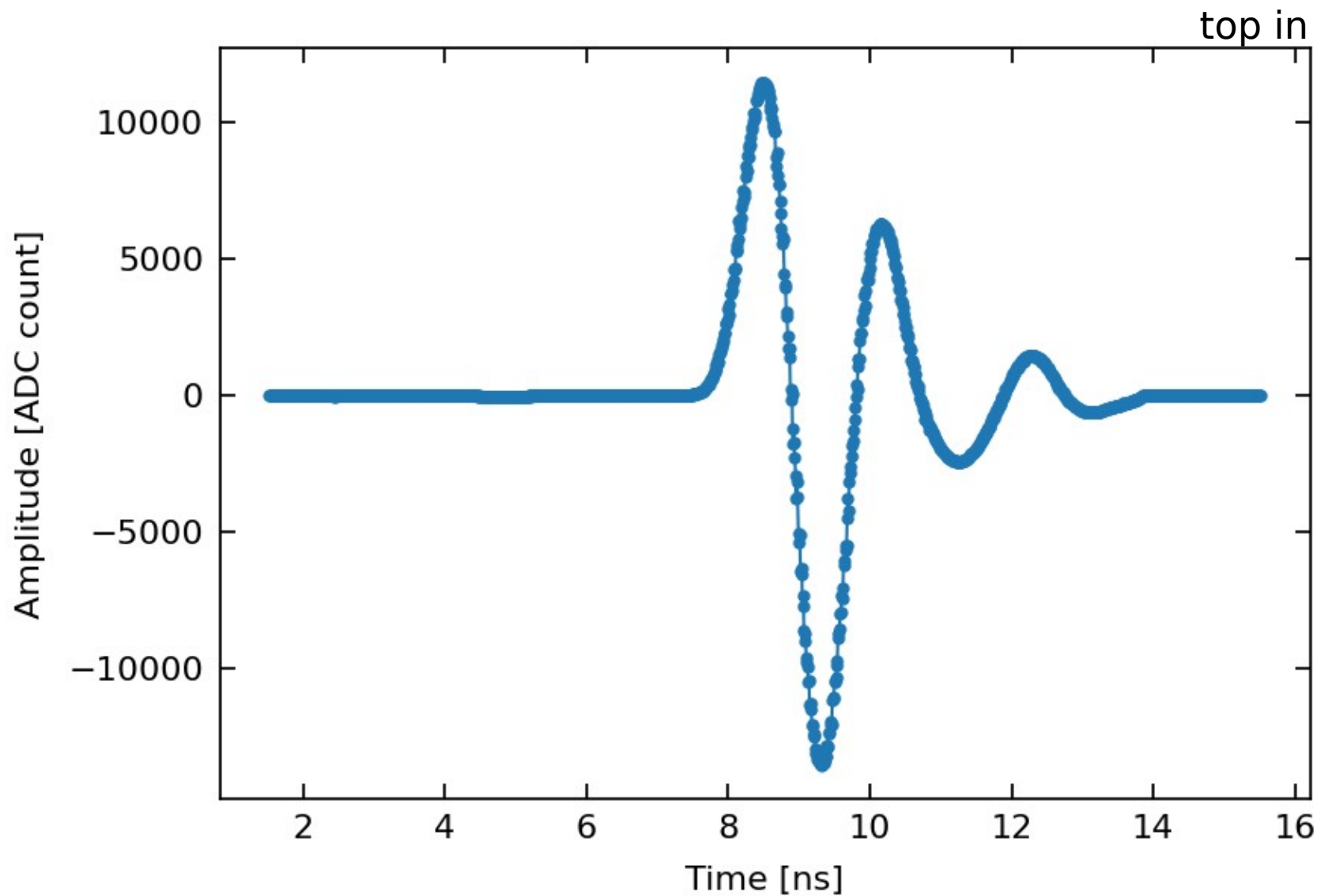
3.5mA: negative swing <u>**as large as**</u> positive
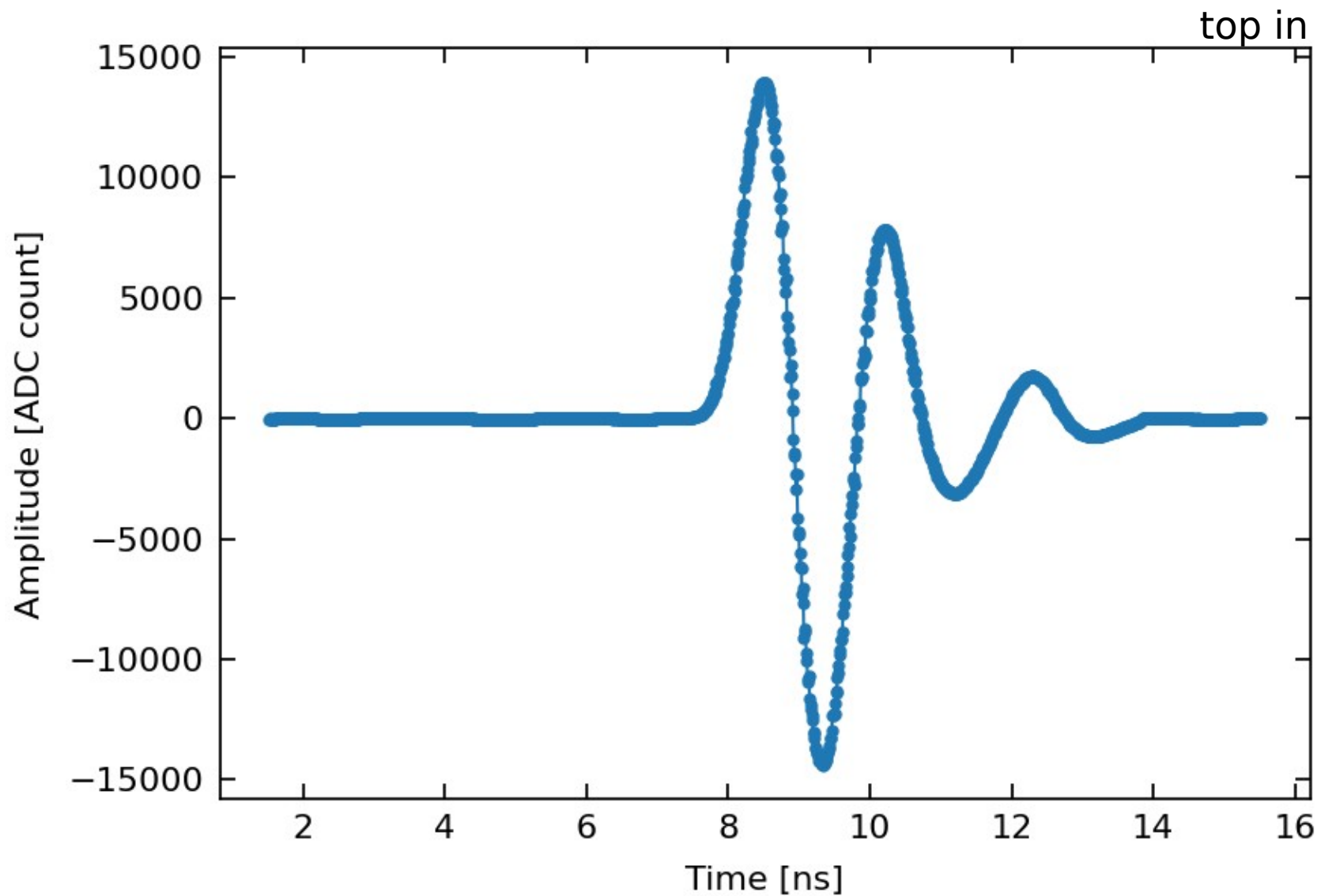
top in

4.2 mA: negative swing <u>**smaller**</u> than positive
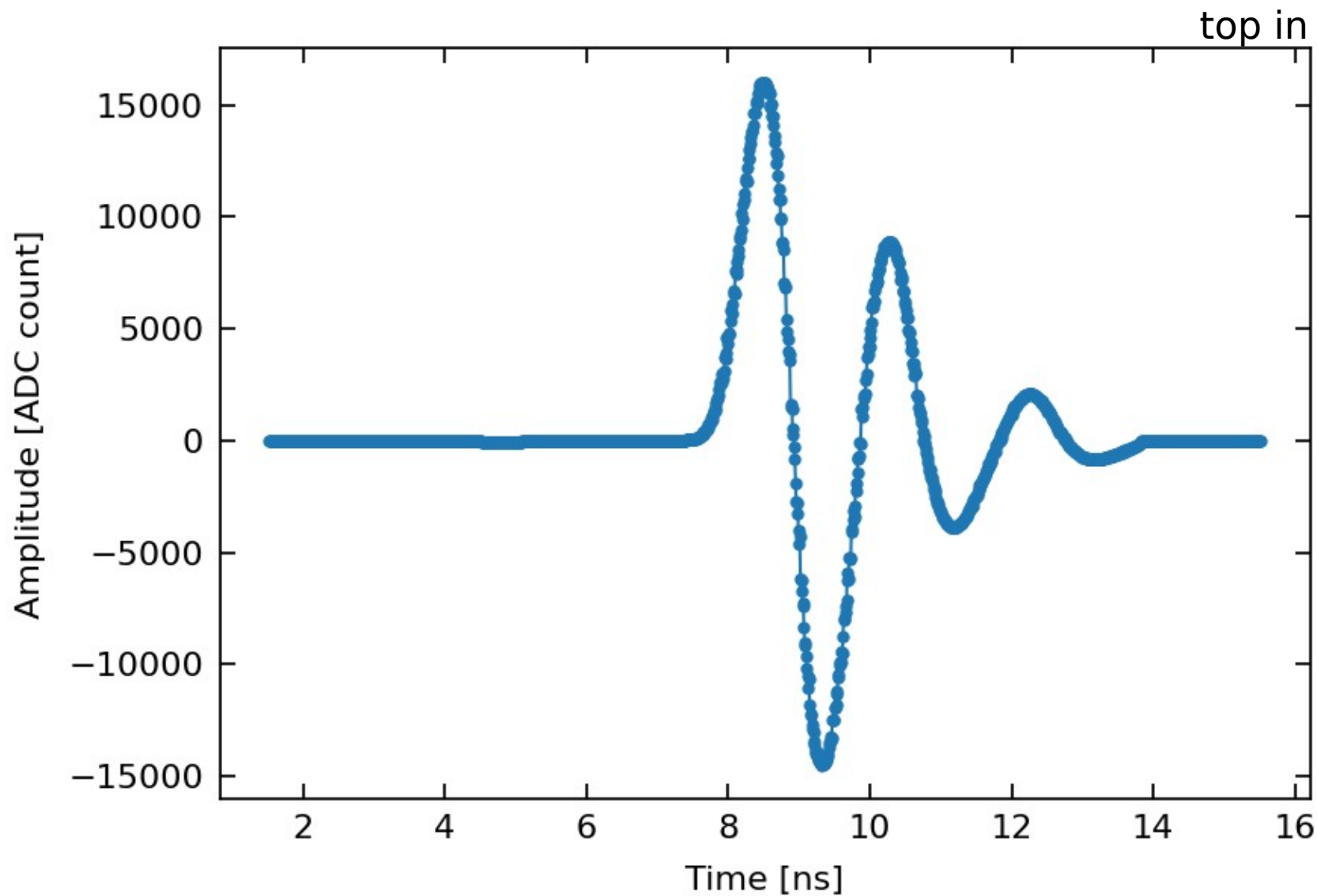
top in

5 mA: negative swing <u>**smaller**</u> than positive
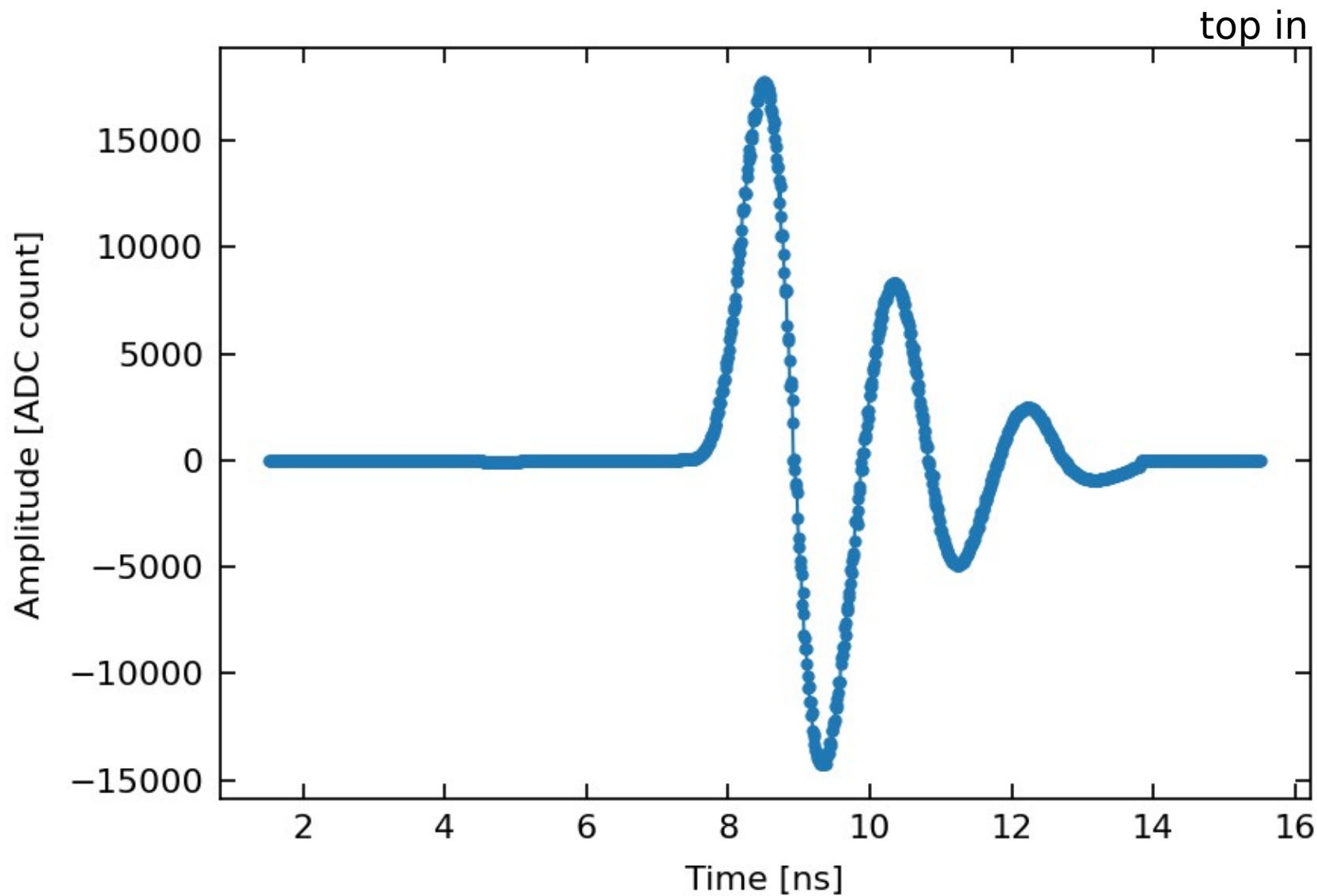
5.6 mA: negative swing <u>**smaller**</u> than positive
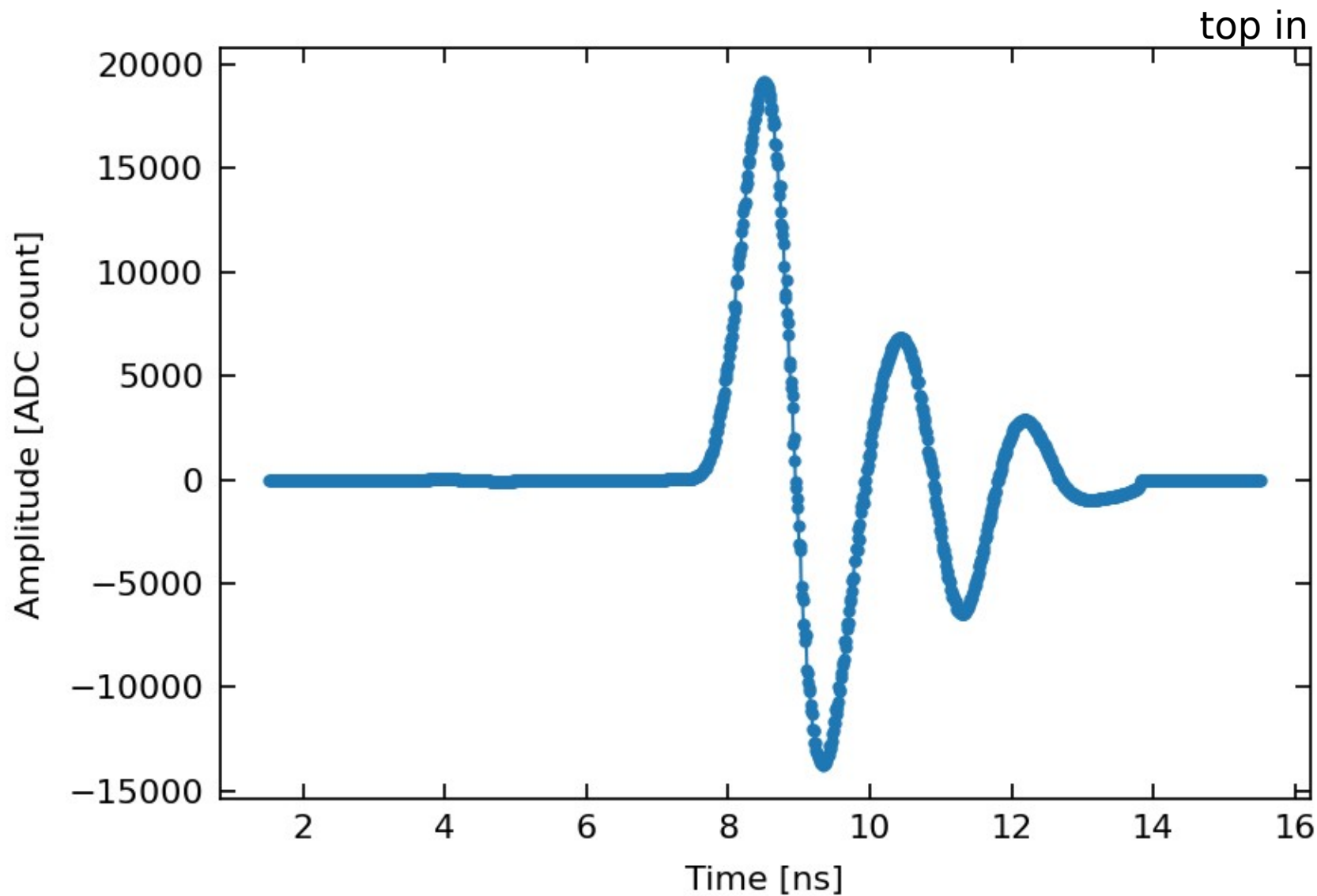
6.3 mA: negative swing <u>**smaller**</u> than positive

top in
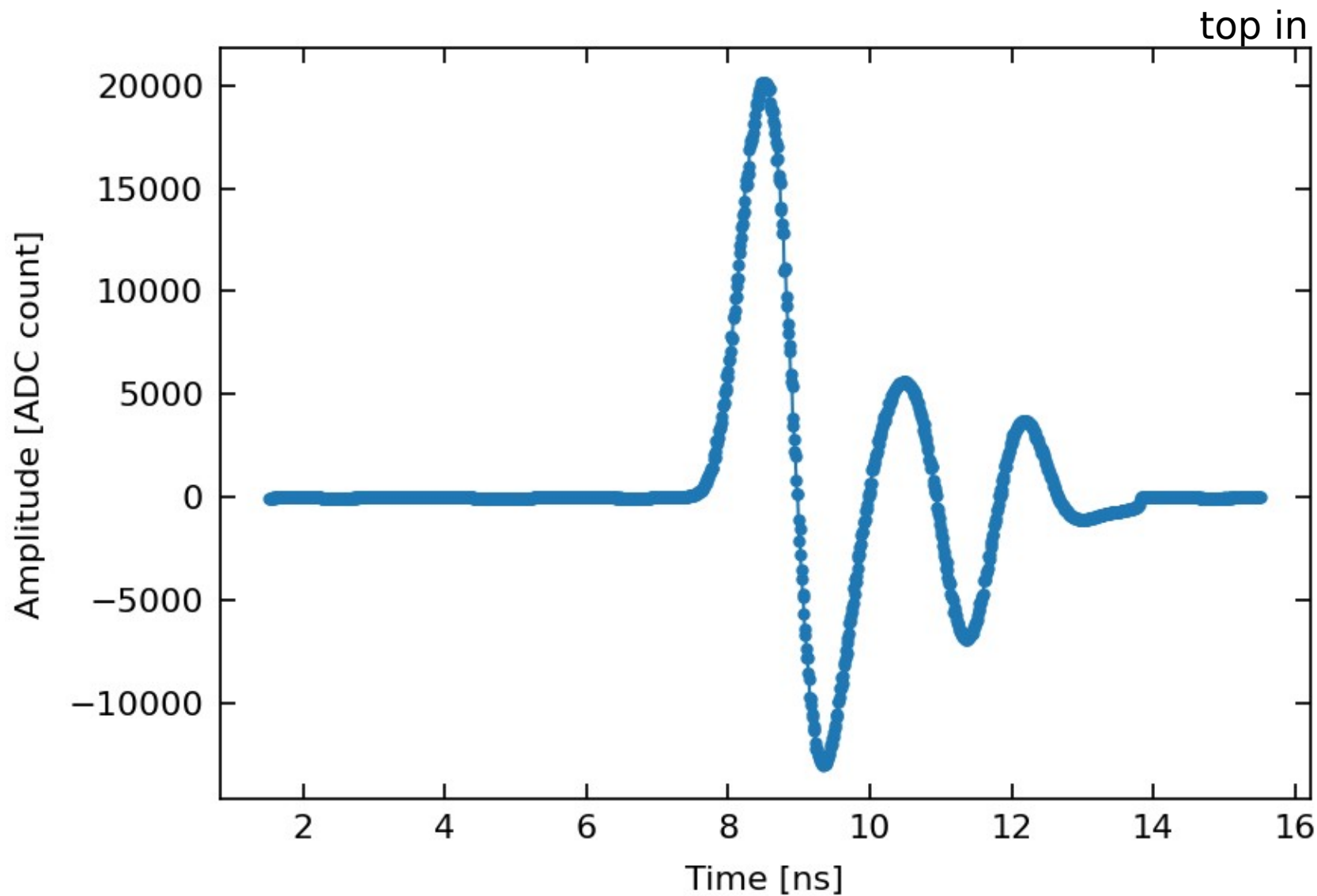
Suggested

Plot waveform peak-to-peak amplitude or ratio as a function of bunch current

Plot x/y beam position as a function of bunch current

Precisely look at timing alignment as the current go up

Additional materials