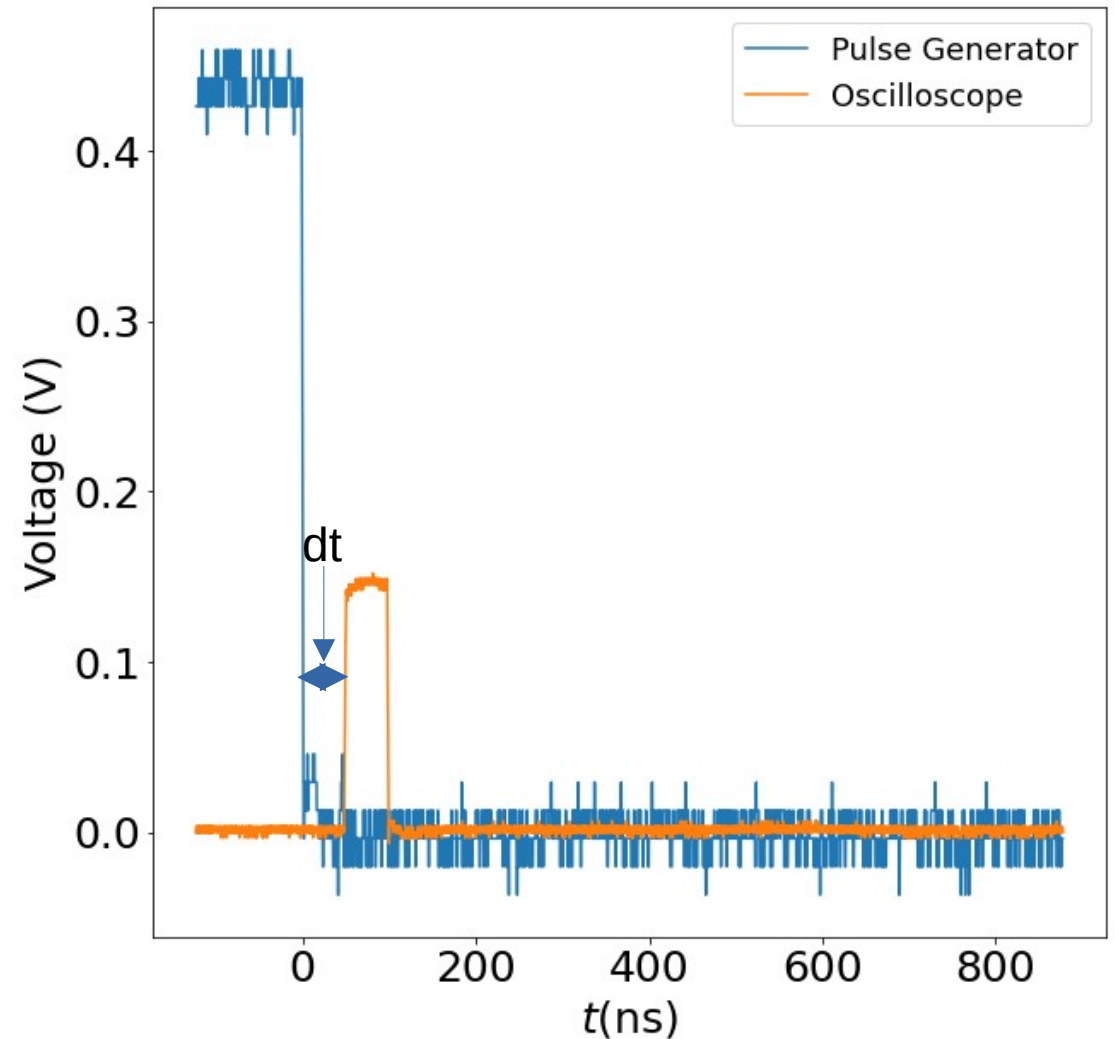


# Time resolution: Method

- Measuring Hitbus output relative to falling edge of pulse generator.
- Both points in time are taken at the halfway point relative to their maximum
  - Variation on this time delay  $dt$  is our time resolution
- Same method was used with the MPW2



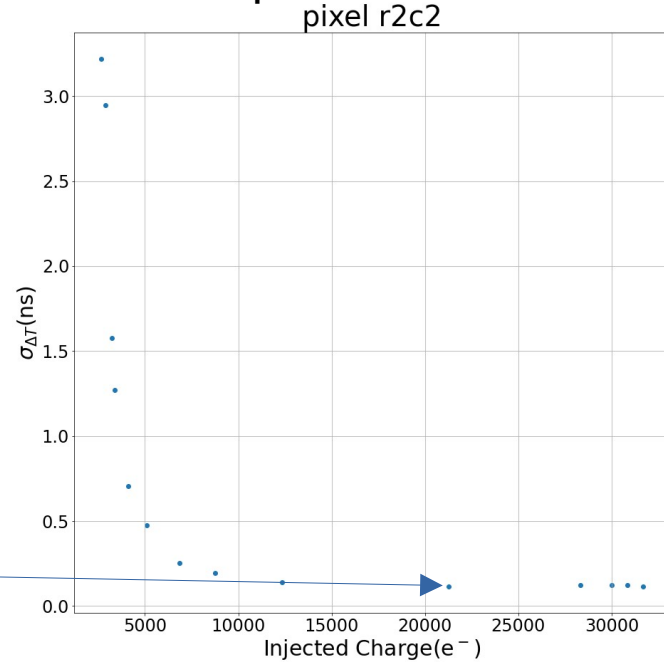
# Time resolution: Comparison

- Performed first measurements with laser and test pulses of the MPW3
- General performance of the chip is far worse than MPW2

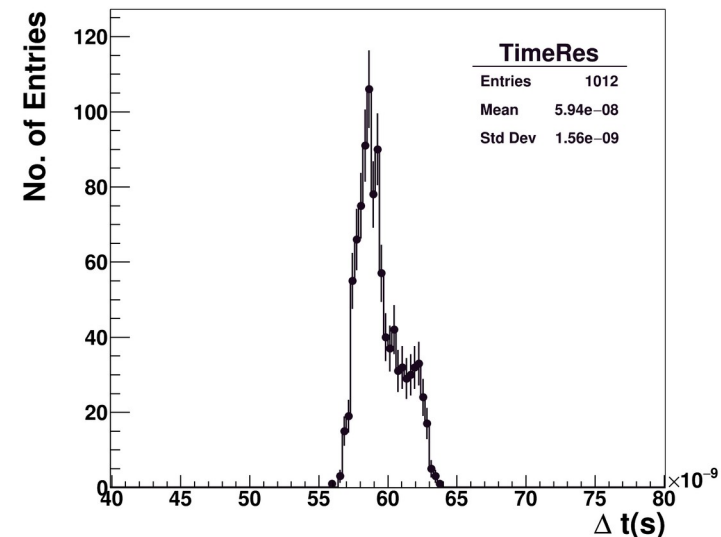
@22k e<sup>-</sup>

- $\sigma_t$  MPW2  $V_{thr} = 1.0V \sim 180$  ps
- $\sigma_t$  MPW3  $V_{thr} = 1.0V \sim 1560$  ps
- Some signals appear to be delayed heavily

### Testpulses MPW2



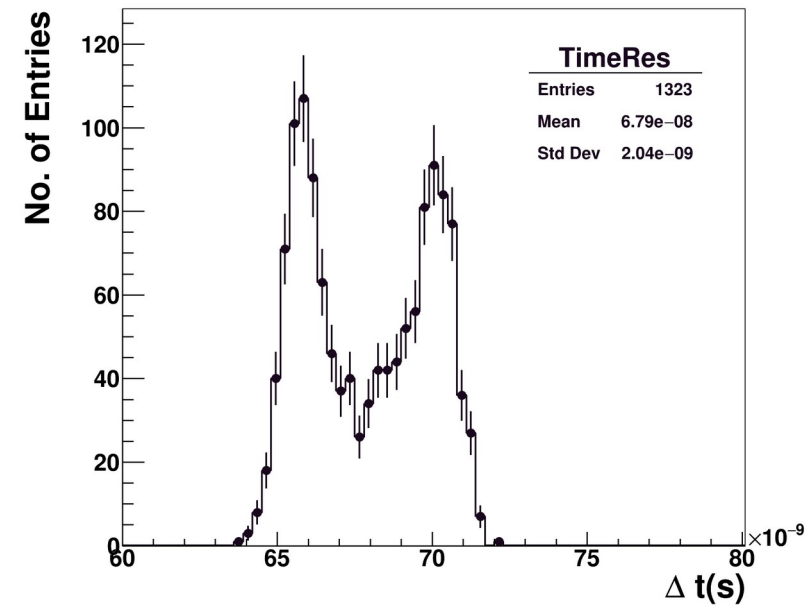
### 1V Threshold Testpulse MPW3 @22ke<sup>-</sup>



# Time resolution: Threshold

- At higher thresholds this delay appears more often
  - Further worsening the time resolution and resulting in significant jitter
    - $\sigma_t$  MPW3  $V_{thr} = 1.0V \sim 1560$  ps
    - $\sigma_t$  MPW3  $V_{thr} = 1.2V \sim 2040$  ps
- Threshold is still far away from 22 ke<sup>-</sup>
- Why does it depend on the threshold?
- Is there a setting that I need to consider?

1.2V Threshold Testpulse MPW3 @22ke<sup>-</sup>



1V Threshold Testpulse MPW3 @22ke<sup>-</sup>

