

TRIUMF nEXO SiPM Studies



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Pulse Amplitude vs Time - VUV3

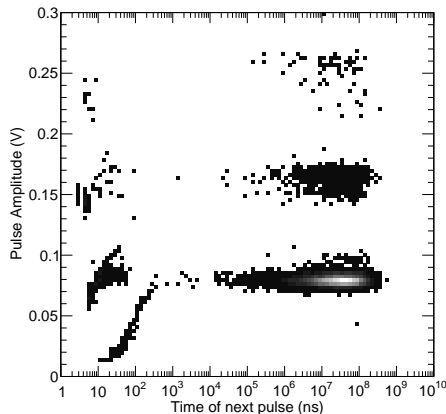
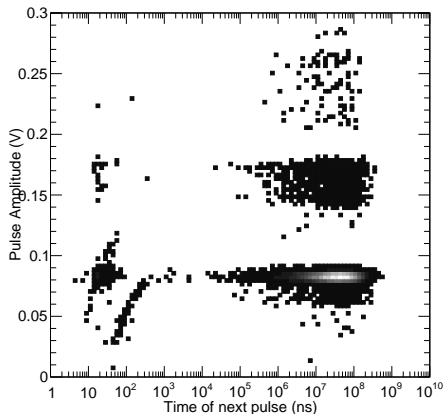


Figure: Amplitude of pulses against the time between the pulse and the previous pulse, before and after improvements to the pulse finder. No fitting involved.

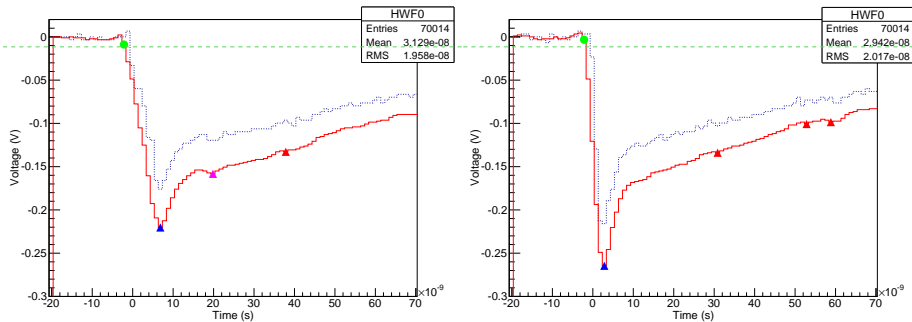


Figure: At higher p.e., the amplitude bands are more spread out. These figures show this to be a result of inconsistent pulse shape.

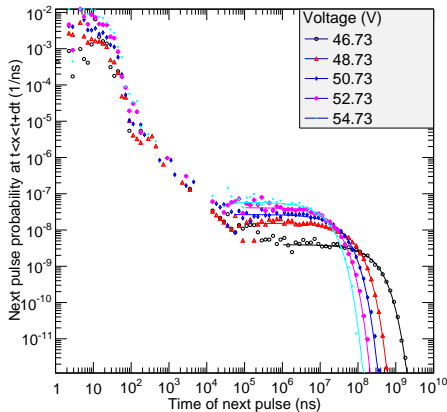


Figure: Delta-time distribution for VUV3 at -100C at several operating voltages.

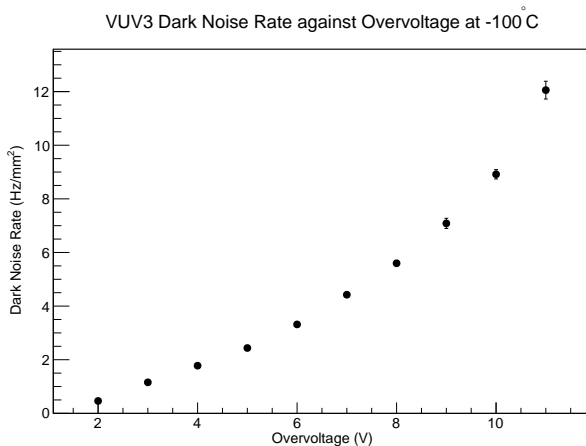


Figure: Dark noise rate against operating voltage for VUV3 at -100°C . Extracted from fit to delta-time distribution.

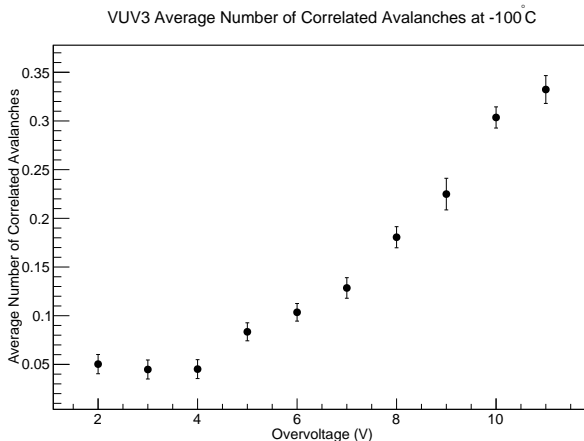


Figure: Afterpulsing rate against operating voltage for VUV3 at -100C. Calculated from values extracted from fit to delta-time distribution.

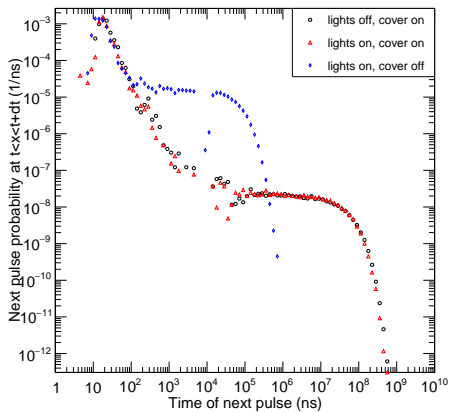


Figure: Delta-time distribution.

- To obtain a less noisy reference waveform, one SiPM was replaced with a Hamamatsu PMT.
- It was seen that the collimators were the source of the $\langle PE \rangle$ measurement instability, by exacerbating any small misalignment, and were removed.

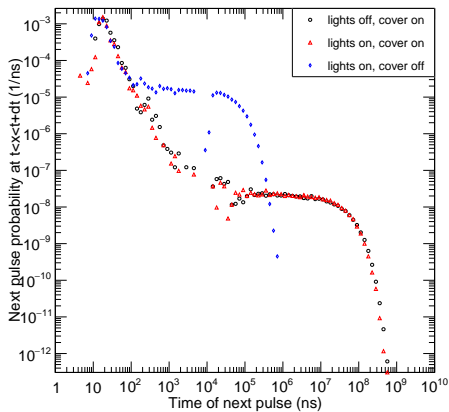


Figure: Delta-time distribution.