Multiplication onset in run 7062, w1d7

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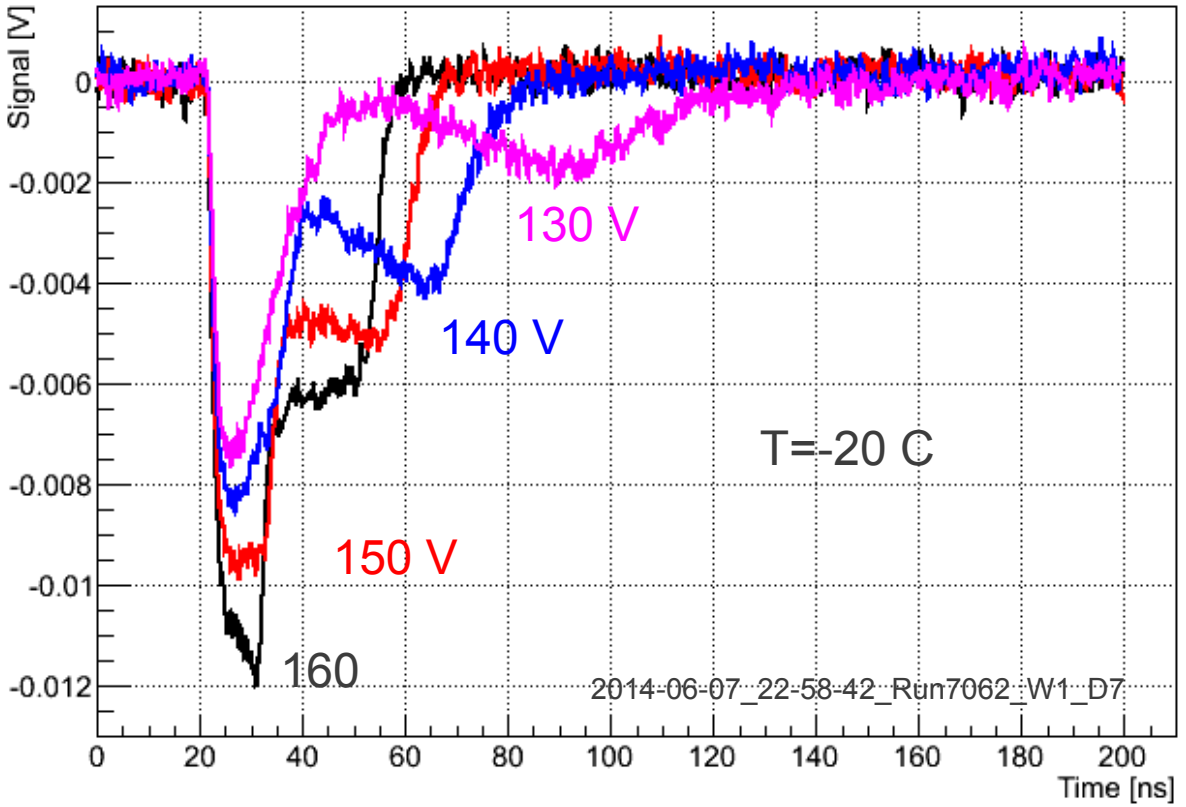
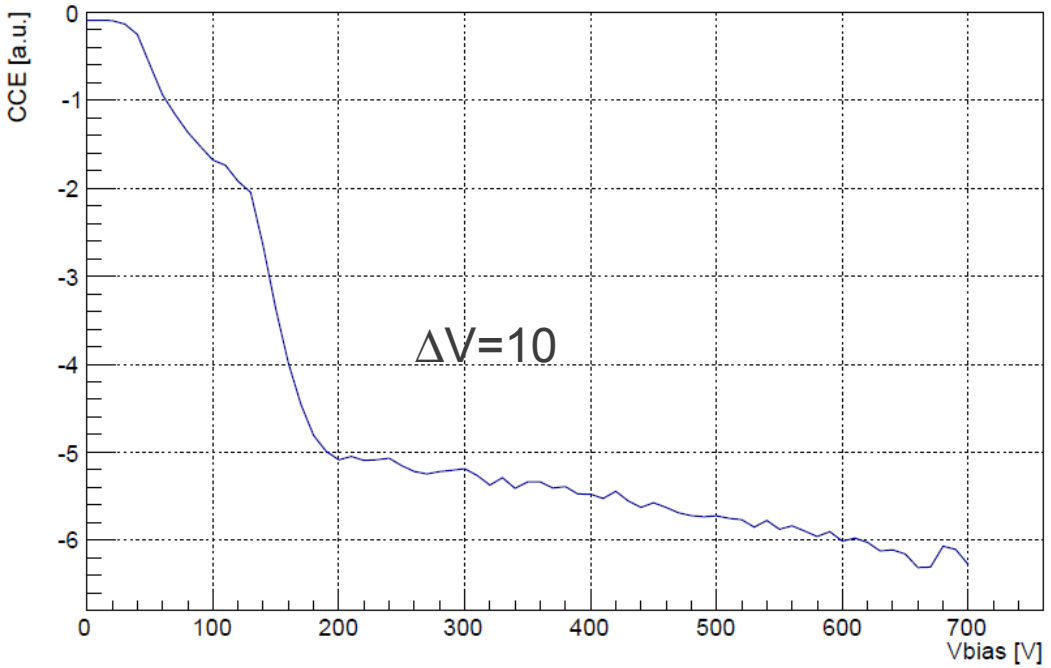
Run7062_W1_D7, back illumination with red laser





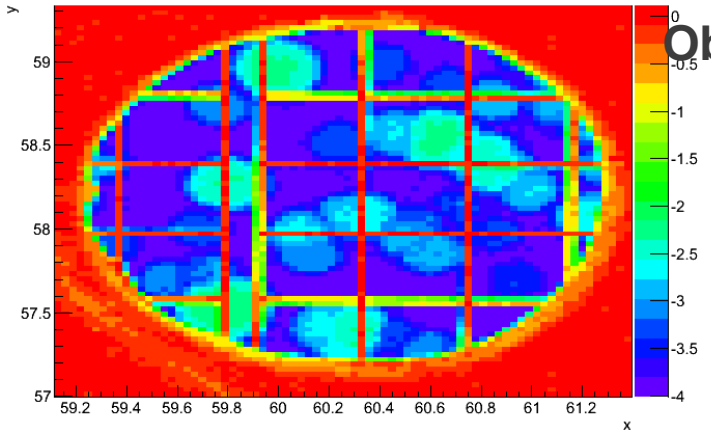
Waveforms for biases ranging from 130V-160V

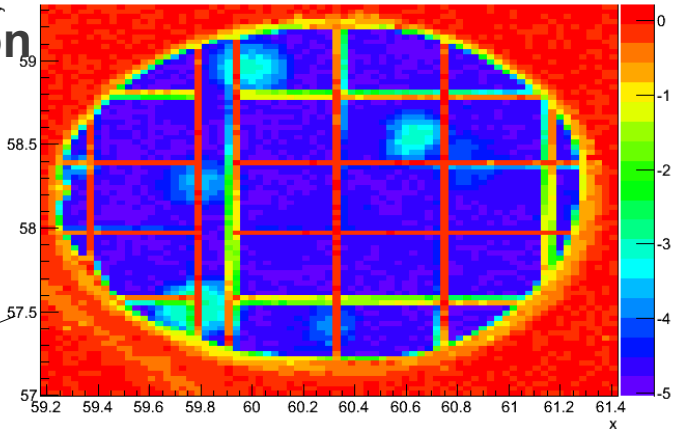
Signal from drifting holes (coming from impact ionization of electrons) visible for bias≥130V, approximately

Observed “onset” of multiplication

V_{bias}=150 V, T=-20 C

2014-06-08_00-04-42_Run7062_W1_D7.txt.root

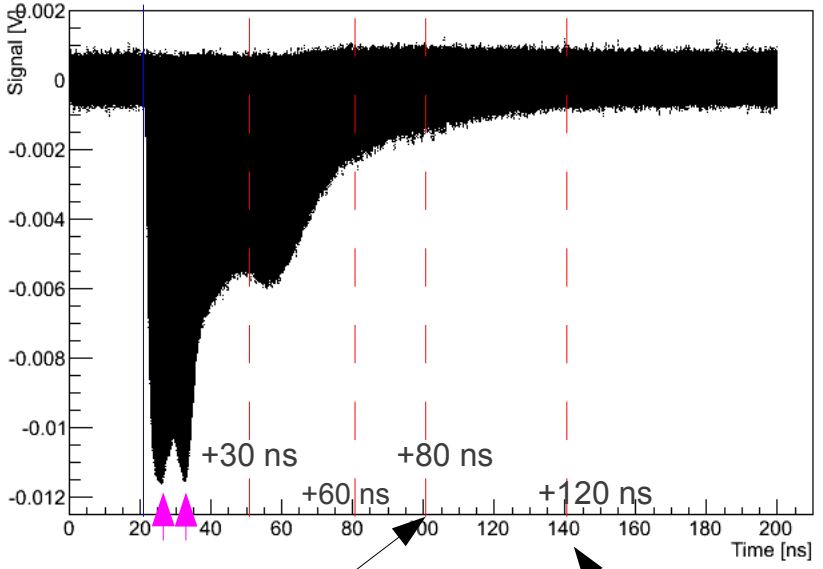




Center plot: all waveforms on top of each other: useful to spot signal start and stop

2D plots are maps of charge as a function of the integration time [30, 60, 80, 120 ns]. Aluminum grid is visible. The ellipse is the sample holder opening.

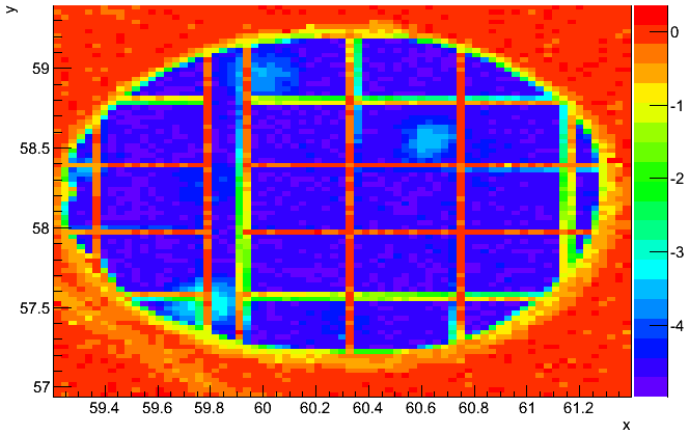
Note the 2 different peaking times of the **electrons in the waveforms** (center plot). The smaller peaking time happens at the spots (see next slide)

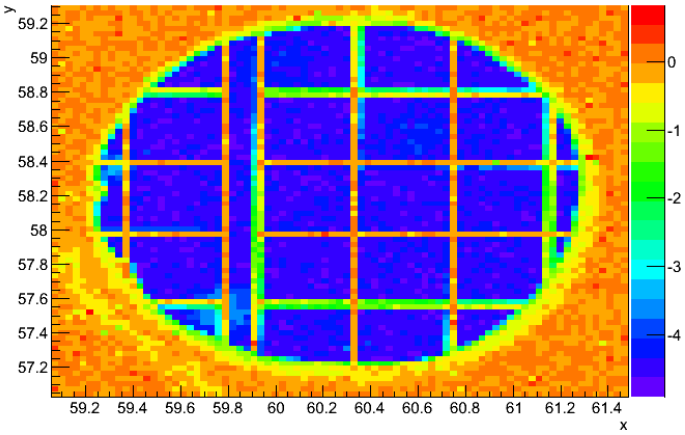


For integration times <80 ns, the charge is smaller at the “spots” than at the rest of the detector. We obtain a non-uniform multiplication map. Indeed, at the spots the holes seem to diffuse, while out of the spots they seem to drift (see next slide)

As integration time increases the effect is washed out cause we include all the contribution of the holes entirely.

Guess: lower E-field at the spots





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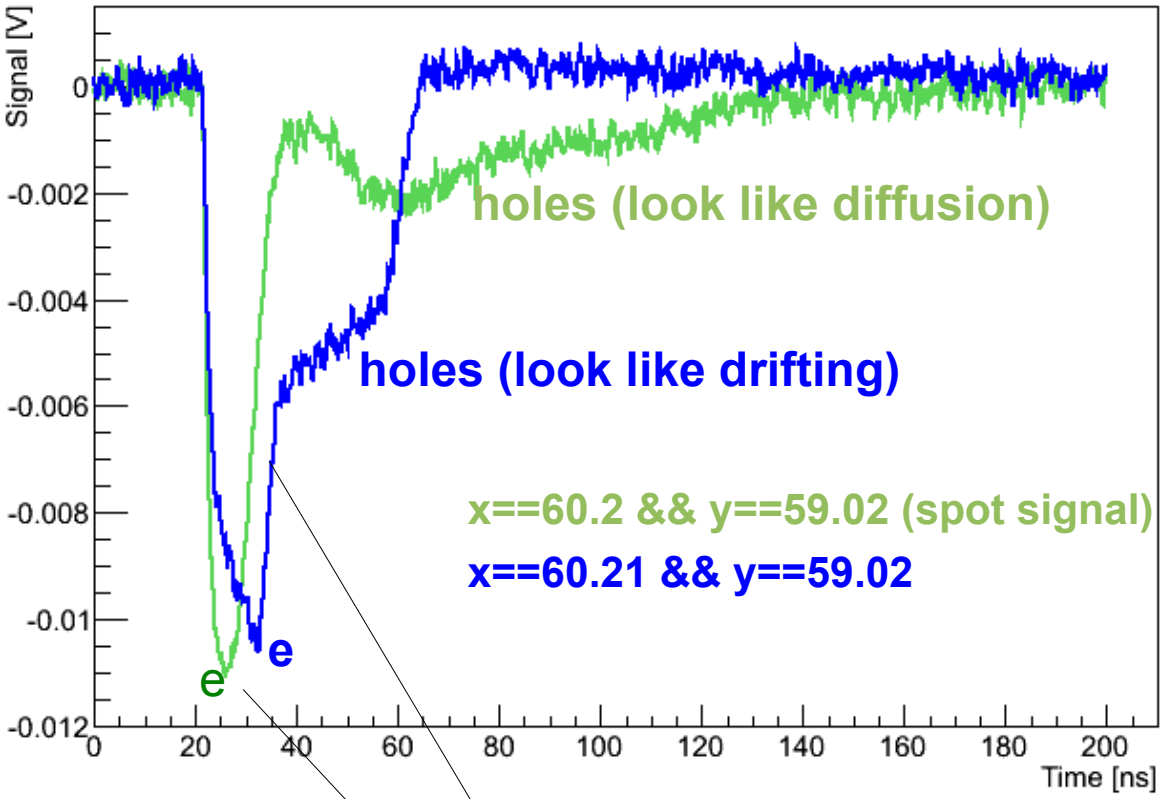
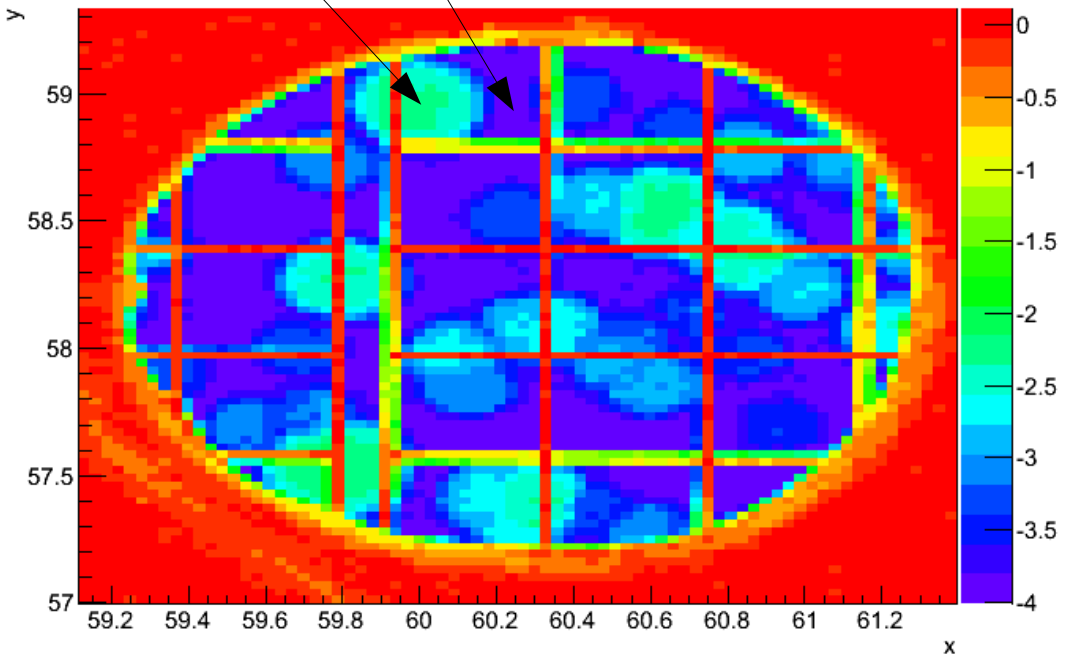
V_{bias}=150 V





To be crosschecked with more diodes