

## Investigation of subsequent pulse detection in irradiated silicon sensors

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During investigations of the signal composition in silicon strip sensors, that were irradiated and annealed until the occurrence of charge multiplication, it was observed that charge carriers created previously have effects on the subsequent signal. This led to the conclusion that drifting charge left the sensor in a meta-stable state.

Using the Edge- and Top- Transient Current technique the influence of subsequent laser pulses was investigated, where a significant decrease of measured charge amplitude was observed. This decrease turned out to be dependent on the laser intensity, the time delay between pulses, the measurement temperature, the applied voltage and the irradiation fluence.

In this study it is investigated how trapping (or charge accumulation) and de-trapping (relaxation) can explain the observed decrease. This includes simulations of the electric field change and a fit model to describe the decrease.

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