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Timing resolution and CCE of n-on-n silicon sensors with TCT setup

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In this work we present 2D charge maps, CCE and timing measurements performed on 3D n-on-n silicon double sided 200µm thick sensors irradiated at different fluency levels, ranging from 1e14neq/cm2 to 1e17neq/cm2 on a TCT setup using different laser intensities, mimicking the height of the signal from a beta-source setup, and some multiples of it. We show CCE above 100% at 1E15neq/cm2 fluency due to charge multiplication while being 40% at the extreme high fluency of 1E17neq/cm2, and showcasing 200ps timing resolution up to 1e15neq/cm2 in very big diode arrays in which timing is highly limited by its noise due to a high capacitance.

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