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## TPA setup for temporal characterisation of silicon detectors

Historically, transient current measurements mainly used single-photon absorption (SPA). In contrast, two-photon absorption (TPA) is limited to a small voxel and allows for three-dimensional imaging of the detector volume. TPA requires strong focusing optics to achieve beam waists of the order of micrometers. This small voxel enables the characterisation of the detector volume in detail. Using the advantage of a fast pulsed laser, also the temporal characteristics of hybrid pixel detectors can be studied in detail

In this talk, the commissioning of a TPA setup at Nikhef is presented. A first estimate of the temporal resolution of the system is derived using a reference diode. Preliminary measurements indicate a temporal resolution of 43 ps, in the time difference measurement between the laser diode-based trigger system and a reference diode. If these two contributions are approximately equal, the laser system component resolution is estimated at 30 ps. In addition to evaluating the temporal performance of the laser setup, timing measurements of planar silicon sensors bonded to Timepix3 ASICs will be shown, indicating the viability of characterising hybrid pixel detectors in both space and time.

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