



Contribution ID: 36

Type: **WG5 - Characterization techniques - facilities**

## Double Beam TCT (DB-TCT): new laser method for high rate sensor tests

*Friday 6 June 2025 09:45 (15 minutes)*

4d tracking detectors for future experiments based on Resistive Silicon Detector technology will be exposed to high channel occupancy due to targeted low density of readout channels. To study the detector response to two nearly concurrent hits, we developed a new Transient Current Technique method (Double Beam TCT), where two focused pulsed laser beams can be controlled independently in space and time to imitate particle pile-up in the sensor. Spatial separation can be achieved by splitting a source beam into two beams coupled to two separate focusing optics systems, while the relative time delay between both pulses is controlled on a few ns level by a variable fiber length.

In the first part of the talk the optical, mechanical and DAQ components of the setup will be presented together with the basic data analysis. The first application of DB-TCT was implemented for characterization of a prototype AC-LGAD strip sensor produced by IME in a pilot run of the DRD3 Project: LGAD based timing tracker development for future colliders. Very preliminary results will be presented in the second part of the talk.

### Type of presentation (in-person/online)

online presentation (zoom)

### Type of presentation (I. scientific results or II. project proposal)

I. Presentation on scientific results

**Author:** HITI, Bojan (Jozef Stefan Institute (SI))

**Presenter:** HITI, Bojan (Jozef Stefan Institute (SI))

**Session Classification:** WG5 - Characterization techniques, facilities