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Evaluation of Allpix Squared simulations for laser-TCT experiments: data/MC comparison

Friday 24 May 2024 10:00 (25 minutes)

The Transient Current Technique (TCT) is a flexible laboratory characterization method for silicon sensors. By precisely injecting charges with laser pulses and analysing waveforms, produced as the deposited charge drifts in the sensor bulk, one may experimentally study different charge collection features of the sensor under test. The Allpix Squared framework offers capabilities of simulation of such experiments, thanks to a dedicated DepositionLaser module, which models the interaction of laser light with silicon sensors.

The goal of this work is to validate performance of Allpix^2 for laser-TCT simulations. This talk features data/MC comparisons of transient current measurements, performed on a CMS Phase-2 strip sensor demonstrator. The experimental data were taken by the means of laser charge injections, using red and infrared lasers, and pulses of different durations (picosecond and nanosecond range). The Allpix^2 transient simulation was performed with DepositonLaser module. For precise modelling of the sensor features, such as electric field and weighting potential, TCAD was used.

Will the talk be given in person or remotely?

Remotely

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Session Classification: New features and developments

Track Classification: New Features