

## Simulation of Gain-Optimized Sensors

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Currently in development, 4D sensors with fast timing and fine spatial resolution rely on short charge collection times in thin devices. They will benefit from signal gain made possible by a region with high electric field inside the device. The region is created by two layers of implant doping stacked on top of each other. As a result, sensor IV and CV characteristics deviate from those of standard sensors without gain. TCAD device simulations give insight into these new characteristics, and in addition provide doping density and electric field maps that are helpful in analyzing regions of charge multiplication. We present a comparison of simulation results with experimental data of gain-optimized diodes fabricated at CNM-Barcelona, Spain.

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