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# TCAD 2D SIMULATIONS FOR PHASE II PIXEL SENSOR DESIGN

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The pixel sensors of the CMS silicon tracker are required to be upgraded to sustain the harsh radiation environment that will be generated during the High Luminosity Large Hadron Collider (HL-LHC) era. To overcome the problem of radiation damage in Si sensors, an R&D effort is being carried out by the Si sensor Device Simulation Group on different designs of pixel sensors through TCAD simulations. The Si pixel are n-on-p types having two different values of strip-pitch, i.e. 50 um and 25 um. In these two configurations, geometries with different isolation techniques (pspray & pstop) and design parameters like the detector thickness, the pspray/pstop peak doping concentration and the depth of the doping, metal overhang, etc have been studied. Various critical parameters like the critical electrical field regions, breakdown voltage, and the charge collection efficiency have been compared as a function of fluence for all these geometries.

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