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Radiation Hard Silicon Detector

Silicon detectors are widely used in high energy experiments because of their good resolution and small size. The detectors give precise measurement of particle's tracks and if placed in a magnetic field the detectors also provide high accuracy momentum measurement. The Planar technology, which was originally developed in the field of microelectronics is widely used for fabrication of semiconductor detectors.

These detectors are placed very close to the interaction point (~2-4cm). In future the high energy experiments are required to operate at high energies and luminosities. The detector designs are not capable to withstand such a high radiation fluences and therefore demands the systematic study of radiation damage of silicon sensors. In the present work, n-type Silicon Pad detectors are fabricated and tested. Although the leakage current is high but showing the desired diode behavior. Results of TCAD simulations for silicon detectors with the guard rings under biasing condition have been presented.

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