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Evaluation of the Timepix chip radiation hardness using ^{60}Co source.

Radiation hardness and stability of detection properties are critical parameters in applications of semiconductor radiation detectors.

The 0.25 μm CMOS technology provides high degree of inherent radiation hardness to displacement and ionization damage.

The active volumes of sensor and readout chip are insensitive to the ionization damage effects, contrary to the SiO_2 insulating layers. The insulating layers have low mobility of holes, which get trapped and present themselves as a space charge, which shifts the working points of MOS transistors, increases leakage and dark currents in sensors.

Here, we present the study of operational, detection and signal processing properties of the irradiated Timepix chip exposed to a high-flux ^{60}Co source to the operational limits of the chip. The annealing process at the room temperature was evaluated, using ^{90}Sr and ^{241}Am sources to measure the detector response over a time period.

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