

TCAD simulation of Low Gain Avalanche Detectors

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Recently proposed Low Gain Avalanche Detector (LGAD) designs has been subject of increasing interest within Si sensor community. The LGAD devices fabricated by CNM Barcelona have shown promising characteristics before irradiation. But, after hadron irradiation, a significant degradation of gain has been observed in these devices. These results have not been explained by earlier simulations and are attributed to the possible acceptor removal with irradiation. In University of Delhi, detailed simulation using Silvaco TCAD tool for non-irradiated and irradiated LGAD devices have been carried out. An already published effective two trap bulk damage model is used to simulate the radiation damage. The effect of different design parameters and hadron irradiation on LGAD operations will be discussed.

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