

Radiation-Induced Bulk Defects and their Impact on the Charge Multiplication in Inter-Pad region in TI-LGADs: A Comparative Study between Irradiated and Non-Irradiated LGAD Samples with Two Trenches i

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In this presentation, we report our findings on the impact of radiation-induced bulk defects on the previously reported phenomenon of strong charge multiplication in the inter-pad (IP) region of non-irradiated Trenched Low-Gain Avalanche Detectors (LGADs) that utilize two trenches as isolation structures. A comparative analysis is conducted between the results obtained from the study of irradiated samples and those from non-irradiated samples. Specifically, we focus on the LGADs with two trenches derived from wafer 11 (with the least shallow trenches) and examine the behavior of the sensors under various bias and laser power intensities. Notably, under identical operational conditions applied to both sets of sensors, we observe a significant reduction in the occurrence of strong spikes in the irradiated samples.

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