

Negative feedback in Si detectors with avalanche multiplication

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The negative feedback in silicon heavily irradiated detectors is a basic mechanism which governs the detector performance [V. Eremin, et al., NIM A 658 (2011) 145]. The talk presents a comparative study of the mechanism in P+-I-N+ and Low Gain Avalanche Diodes (LGAD) utilizing the classic structure of avalanche photodiodes performed in the fluence range up to 1×10^{15} neq/cm². The analytical evaluations are applied to express the major trends of the voltage and fluence dependences of the detector parameters.

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