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# Design and Fabrication of an Optimal Peripheral Region for the LGAD

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An optimal design of the peripheral region prevents the Low Gain Avalanche Detectors (LGAD) from undesirable malfunctions, which may compromise the accomplishment of their outstanding possibilities as charge particle detectors for High Energy Physics experiments. Without a proper design, LGAD detectors may suffer from premature breakdown or high leakage current levels, which hinder the signal production, as well as enlarging the noise.

This work deals with the technological aspects of a suitable LGAD design. The impact of different design strategies for the device periphery is evaluated through simulation. As a result of the conclusions extracted from this work, a new optimized LGAD process has been devise at the IMB-CNM. Details of the new LGAD production are included in this presentation.

This work is performed in the framework of the CERN RD-50 collaboration.

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