

Radiation hardness of thin LGAD detectors

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Thin Low Gain Avalanche Detectors suitable for timing applications at LHC were produced along the control samples by CNM and FBK. The effects of radiation on gain were studied after reactor neutron and 200 MeV pion irradiations. A significant decrease of charge was observed after irradiation in line with previous measurements pointing to the decrease of electric field in the multiplication region. Unlike for sensors of standard thickness operation at very high voltages (>600 V) leads to gain also at equivalent fluences beyond $1e15$ cm⁻², a consequence of very high average electric field in the sensor. At fluences beyond few times $1e15$ cm⁻² there is no difference between standard and LGAD detectors in terms of gain at very high voltages.

TRACK

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