

Detailed investigation of charge multiplication properties in highly irradiated thin epitaxial silicon diodes

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Recently, charge multiplication has been observed in charge collection measurements of highly irradiated (i.e. several $1e15$ to $1e16$ n/cm²) 75, 100 and 150 μ m thin epitaxial silicon diodes. CCE results for different sources (670, 830, 1060 nm laser light and 5.8 MeV alpha particles with different absorber layers between source and diode) will be presented and compared to theoretical considerations. The pulse height and charge spectra for single TCT pulses were investigated and compared for different charge multiplication levels. Moreover, the spatial homogeneity and long-term stability of collected charge in the multiplication regime were studied.

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