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Charge Collection Study of SiC-LGAD - SICAR1

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Silicon carbide (SiC) has potential to be used for fast particle detection in radiation environment because of its wider band gap and high electron mobility. To improve the SiC PIN detection for small signal generated by minimum ionizing particles (MIPs), a 4H-SiC Low Gain Avalanche Diode has been proposed –SICAR. The first version (SICAR1) has been fabricated with initial electrical test shows that the dark current is around 5.6uA under full depletion voltage at 350V. The charge collection efficiency is up to 98%@ 150V. These findings offer promising possibilities for fast particle detection in future radiation environments.

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