

Defect Characterisation on 4H Silicon Carbide Devices

Wednesday 19 June 2024 16:00 (20 minutes)

Future collider experiments will reach fluences too high for current silicon-based detectors to handle. Research into making silicon more radiation hard is required, but new materials could also yield the desired properties. Silicon carbide is one of the materials currently considered due to its large bandgap, leading to low leakage currents even after high fluences of irradiation and allowing for non-cooled operation.

This talk aims to give an overview and update on the status of the defect characterisation measurements on this novel material performed in the SSD group at CERN.

Two kinds of n-type 4H-SiC pad diodes produced by CNM are being investigated with I-DLTS, C-DLTS and TSC measurements. Some samples have been irradiated with 23 GeV protons to fluences of up to $1\text{E}+15\text{ p/cm}^2$. Their performance before and after irradiation will be discussed as well as the defects present in the as is material.

Type of presentation (in-person/online)

in-person presentation

Type of presentation (scientific results or project proposal)

Presentation on scientific results

Primary author: SORGENFREI, Niels (Albert Ludwigs Universitaet Freiburg (DE))

Co-authors: ARNQVIST, Elias; RIZWAN, Faiza (Cern); MOLL, Michael (CERN); WIEHE, Moritz (CERN); GURIM-SKAYA, Yana

Presenter: SORGENFREI, Niels (Albert Ludwigs Universitaet Freiburg (DE))

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