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TCT Study on the effect of epitaxial graphene contacts in SiC detectors

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Silicon Carbide has interesting properties for high temperature, high radiation environment and timing radiation detector applications due to its thermal conductivity ($3.7 \text{ W}/(\text{cm} \cdot ^\circ\text{C})$), atomic displacement threshold (22-35 eV) and high saturation velocity ($2.2 \times 10^7 \text{ cm/s}$). Silicon Carbide detector diodes have been fabricated in IMB-CNM with epitaxially-grown graphene onto Silicon Carbide (EG-SiC) as interface between the implant and the readout electrode, useful for e.g. heavy ion detection by removing metallisation in the active area. In this contribution, the effect of EG in a SiC PiN diode is studied as compared to a SiC sample without graphene by means of the Transient Current Technique.

Authors: RIUS, Gemma; Dr PELLEGRINI, Giulio (Centro Nacional de Microelectrónica (IMB-CNM-CSIC) (ES)); LOPEZ PAZ, Ivan (The Barcelona Institute of Science and Technology (BIST) (ES)); Dr RAFÍ, Joan Marc (Consejo Superior de Investigaciones Científicas (CSIC) (ES))

Presenter: LOPEZ PAZ, Ivan (The Barcelona Institute of Science and Technology (BIST) (ES))

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