ID de la contribución : **25** Tipo : **Talk**

Study of epitaxial graphene contacts for Silicon Carbide radiation dosimetry and detection

jueves, 30 de noviembre de 2023 17:45 (15)

Silicon Carbide (SiC) is a radiation hard wide bandgap semiconductor, which makes it an interesting alternative for radiation detection applications such as radiotherapy instrumentation. Reducing the amount of metal over the active can positively affect the accuracy of the measurement.

The first SiC diodes with epitaxial graphene contacts were produced at IMB-CNM for radiation detection. These detector prototypes have been characterised by means of a pulsed laser transient current measurement and a radioactive alpha source, showcasing the charge collection properties. These measurements have been followed by a characterisation by means of a Linac at the University of Santiago de Compostela. These show a percent-level dose rate linearity of the prototypes, which is promising for future iterations for the medical application.

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Clasificación de temáticas : Dosimetry