Contribution ID: **32** Type: **Oral**

Radiation Tolerance Study of neutron-irradiated SiC pn planar diodes

Thursday, 2 March 2023 16:10 (20 minutes)

We report on the study of the radiation tolerance of silicon carbide (SiC) pn planar diodes manufactured at IMB-CNM. Dedicated TPA-TCT and TRIBIC measurement campaigns, carried out at the UPV-EHU and CNA femto laser and ion microbeam facilities respectively, were used to characterise the response of the diodes. The studied devices were irradiated with neutrons up to a fluence of $1 \times 10^{15} n_{eq}/cm^2$. The charge collection efficiency and the depletion region were studied as a function of fluence. We observed evidence for a possible radiation-induced polarisation of the SiC substrate, with a strong recovery of charge collection efficiency and depletion width when the irradiated diodes are forward biased.

Primary authors: JIMENEZ RAMOS, Carmen; QUINTANA SAN EMETERIO, Cristian (Universidad de Cantabria and CSIC (ES)); NAVARRETE RAMOS, Efren (Universidad de Cantabria and CSIC (ES)); PALOMO PINTO, Francisco Rogelio (Universidad de Sevilla (ES)); Dr RIUS, Gemma (Institute of Microelectronics of Barcelona IMB-CNM-CSIC); Dr PELLEGRINI, Giulio (Centro Nacional de Microelectrónica (IMB-CNM-CSIC) (ES)); LOPEZ PAZ, Ivan (The Barcelona Institute of Science and Technology (BIST) (ES)); Dr VILA ALVAREZ, Ivan (Instituto de Física de Cantabria (CSIC-UC)); GARCIA LOPEZ, Javier (University of Seville); Dr RAFÍ, Joan Marc (Consejo Superior de Investigaciones Cientificas (CSIC) (ES)); FERNANDEZ GARCIA, Marcos (Universidad de Cantabria and CSIC (ES)); MOLL, Michael (CERN); WIEHE, Moritz (CERN); MONTERO, Raul; JARAMILLO ECHEVERRIA, Richard (Universidad de Cantabria and CSIC (ES)); PAPE, Sebastian (Technische Universitaet Dortmund (DE))

Presenter: Dr VILA ALVAREZ, Ivan (Instituto de Física de Cantabria (CSIC-UC))

Session Classification: TECHNOLOGIES

Track Classification: Technology