Contribution ID: **98** Type: **talk**

Overview of CNM LGAD results with B, Ga and C diffused Si-on-Si and epitaxial wafers (in-person)

Tuesday 14 September 2021 12:25 (15 minutes)

Low Gain Avalanche Detectors (LGADs) are n-on-p silicon sensors with an extra doped p-layer below the n-p junction which provides signal amplification. When the primary electrons reach the amplification region new electron-hole pairs are created that drift towards the p+ region increasing the generated signal. The moderate gain of these sensors, together with the relatively thin active region, provide excellent time performance for minimum ionization particles. To mitigate the effect of pile-up at the HL-LHC by both the ATLAS and CMS experiments have chosen the LGAD technology for their High Granularity Timing Detector (HGTD) and for the End-Cap Timing Layer (ETL) respectively. A full characterization of LGAD sensors fabricated at CNM before and after neutron irradiation up to 2.5E15 neq/cm2 will be presented. Sensors produced in epitaxial and Si-on-Si wafers and doped with Boron and Gallium and also diffused with Carbon have been studied. The results include their electrically characterization (IV, CV and bias voltage stability) and performance studies with a Sr-90 radioactive source setup. Also the behaviour of the Inter-Pad region for 2x2 LGAD arrays with Transient Current Technique (TCT) at different fluences will be shown.

Your name

Chiara Grieco

email

cgrieco@ifae.es

Title

Ms

Nationality

Italian

Institute

IFAE Barcelona

Authors: DOBLAS MORENO, Albert; GRIECO, Chiara (Istitut de Fisica d'Altes Energies (IFAE) - Barcelona (ES)); PELLEGRINI, Giulio (Centro Nacional de Microelectrónica (IMB-CNM-CSIC) (ES)); ANTONIO VILLEGAS DOMINGUEZ, Jairo; CASTILLO GARCIA, Lucia (IFAE - Barcelona (ES)); MOFFAT, Neil (Consejo Superior de Investigaciones Cientificas (CSIC) (ES)); HIDALGO, Salvador (Instituto de Microelectronica de Barcelona (IMB-CNM-CSIC)); GRINSTEIN, Sebastian (IFAE - Barcelona (ES))

Presenter: GRIECO, Chiara (Istitut de Fisica d'Altes Energies (IFAE) - Barcelona (ES))

Session Classification: Position Sensitive Fast Timing Detectors 1

Track Classification: Position Sensitive Fast Timing Detectors