



Contribution ID: 189

Type: not specified

Silicon Carbide Detectors for Ionizing Radiation: history, state of the art and perspectives

Thursday, 18 March 2021 12:00 (20 minutes)

Silicon Carbide (SiC) is a wide bandgap semiconductor with outstanding physical properties for detectors of ionizing radiation. The wide band gap (up to 3.2 eV), high saturation velocities of the charge carriers (200 um/ns), high breakdown field (2 MV/cm), high thermal conductivity (4.9 W/cm²) and relatively large threshold displacement energy (21-35eV), allow low-noise, fast response and stable operation in environments and conditions forbidden to other semiconductors. Since 1998, considerable R&D efforts have been devoted worldwide to develop SiC radiation detectors and this presentation focuses on the results obtained with different crystals (semi-insulating or undoped-epitaxial) and detector types (pad, pixel, microstrip) operating in different contexts: from the extremely low signals of soft X-ray spectroscopy to the huge radiation exposure in TW/PW laser-induced plasmas experiments. The perspectives for further development and application of SiC detectors and their advantages will be finally discussed.

Primary author: Prof. BERTUCCIO, Giuseppe (Politecnico di Milano)

Presenter: Prof. BERTUCCIO, Giuseppe (Politecnico di Milano)

Session Classification: Solid State Vertexing and Tracking

Track Classification: Solid State