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Nota di contenuto	Development OF Si DETECTORS FOR THE CMS LHC Experiments -- Physics and Technology of Si Detectors.-Performance of MCz Si Material for p+nn+ and n+pp+ Si Sensor Design: Status and Development for HL-LHC: Status and Development for HL-LHC -- Development OF RADIATION HARD PIXEL DETECTORS FOR THE EUROPEAN XFEL -- T-CAD Simulation for the designing of detectors --

Development of Radiation Hard p+n Si Pixel Sensors for the European XFEL -- Analysis & Optimal Design of Radiation Hard p+n Si Pixel Detector for the Next generation Photon Science Experiments -- CapacitanceS in p+n silicon pixel sensors using 3-D TCAD simulation approach.-CHARACTERIZATION OF SI DETECTORS -- Analysis and TCAD Simulation for C/V, and G/V Electrical Characteristics of Gated Controlled Diodes for the AGIPD of the EuXFEL -- Si Detector for HEP and Photon Science Experiments: How to Design Detectors by TCAD Simulation -- Appendices.

Sommario/riassunto

This book reviews the HL-LHC experiments and the fourth-generation photon science experiments, discussing the latest radiation hardening techniques, optimization of device & process parameters using TCAD simulation tools, and the experimental characterization required to develop rad-hard Si detectors for x-ray induced surface damage and bulk damage by hadronic irradiation. Consisting of eleven chapters, it introduces various types of strip and pixel detector designs for the current upgrade, radiation, and dynamic range requirement of the experiments, and presents an overview of radiation detectors, especially Si detectors. It also describes the design of pixel detectors, experiments and characterization of Si detectors. The book is intended for researchers and master’s level students with an understanding of radiation detector physics. It provides a concept that uses TCAD simulation to optimize the electrical performance of the devices used in the harsh radiation environment of the colliders and at XFEL. .