



# **Ionizing Radiation Effects in Electronics: From Memories to Imagers (Devices, Circuits, and Systems)**

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## Ionizing Radiation Effects in Electronics: From Memories to Imagers (Devices, Circuits, and Systems)

**Ionizing Radiation Effects in Electronics: From Memories to Imagers** delivers comprehensive coverage of the effects of ionizing radiation on state-of-the-art semiconductor devices. The book also offers valuable insight into modern radiation-hardening techniques.

The text begins by providing important background information on radiation effects, their underlying mechanisms, and the use of Monte Carlo techniques to simulate radiation transport and the effects of radiation on electronics. The book then:

- Explains the effects of radiation on digital commercial devices, including microprocessors and volatile and nonvolatile memories—static random-access memories (SRAMs), dynamic random-access memories (DRAMs), and Flash memories
- Examines issues like soft errors, total dose, and displacement damage, together with hardening-by-design solutions for digital circuits, field-programmable gate arrays (FPGAs), and mixed-analog circuits
- Explores the effects of radiation on fiber optics and imager devices such as complementary metal-oxide-semiconductor (CMOS) sensors and charge-coupled devices (CCDs)

Featuring real-world examples, case studies, extensive references, and contributions from leading experts in industry and academia, **Ionizing Radiation Effects in Electronics: From Memories to Imagers** is suitable both for newcomers who want to become familiar with radiation effects and for radiation experts who are looking for more advanced material or to make effective use of beam time.

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