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Titolo	Single-Event Effects, from Space to Accelerator Environments : Analysis, Prediction and Hardening by Design // by Ygor Quadros de Aguiar, Frédéric Wrobel, Jean-Luc Autran, Rubén García Alía
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Soggetti	Electronic circuits Electronic circuit design Aerospace engineering Astronautics Electronic Circuits and Systems Electronics Design and Verification Aerospace Technology and Astronautics
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Nota di contenuto	Radiation environments and their effects on electronics -- Introduction to Single-Event Effects -- Single-event effects prediction methodologies -- Radiation Hardness Assurance (RHA) methodologies -- Radiation hardening techniques -- Analysis of RHBD techniques at layout level -- Analysis of RHBD techniques at circuit level -- Hardness improvement based on signal probability -- Conclusions/Future Perspectives.
Sommario/riassunto	This book describes the fundamental concepts underlying radiation-induced failure mechanisms in electronic components operating in harsh environments, such as in space missions or in particle accelerators. In addition to providing an extensive overview of the dynamics and composition of different radiation environments, the authors discuss the failure mechanisms, known as single-event effects (SEEs), and dedicated failure modeling and prediction methodologies.

Additionally, novel radiation-hardening-by-design (RHBD) techniques at physical layout and circuit levels are described. Readers who are newcomers to this field will learn the fundamental concepts of particle interaction physics and electronics hardening design, starting from the composition and dynamics of radiation environments and their effects on electronics, to the qualification and hardening of components. Experienced readers will enjoy the comprehensive discussion of the state-of-the-art in modeling, simulation, and analysis of radiation effects developed in the recent years, especially the outcome of the recent European project, RADSAGA. Describes both the fundamental concepts underlying radiation effects in electronics and state-of-the-art hardening methodologies Addresses failure mechanisms, known as single-event effects (SEEs), and dedicated failure modeling and prediction methodologies Reveals novel radiation-hardening-by-design (RHBD) techniques at physical layout and circuit levels Offers readers the first book in which particle accelerator applications will be extensively included in the radiation effects context This is an open access book.
