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   Titolo   Radiation Effects on Integrated Circuits and Systems for Space
                       Applications / / edited by Raoul Velazco, Dale McMorrow, Jaime Estela

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   Soggetti   Electronic circuits
                       Signal processing
                       Image processing
                       Speech processing systems
                       Electronics
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   Lingua di pubblicazione   Inglese

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   Livello bibliografico   Monografia

   Nota di bibliografia   Includes bibliographical references.

   Nota di contenuto   Chapter1: Space and Radiation Environments -- Chapter2: System-
                       Level Modeling and Analysis fo the Vulnerability of a Processor to SEU
                       -- Chapter3: Single Event Effects Test Methods -- Chapter4:
                       Characteristics and Applications of Pulsed-Laser-Induced Single-Event
                       Effects -- Chapter5: Microprocessor Testing -- Chapter6: Fault
                       Injection Methodologies -- Chapter7: Mitigation techniques and Error
                       prediction applied in Multicore processors -- Chapter8: Improving
                       reliability of multi/many-core processors by using NMR-MPar approach
                       -- Chapter9: System Hardening and Real Applications -- Chapter10:
                       Backward Error Recovery in SRAM based FPGA -- Chapter11:
                       Development of a Hardened 150nm Standard Cell library -- Chapter12:
                       COTS in Space: Constraints, Limitations and Disruptive Capability --
                       Chapter13: COTS & the NewSpace -- Chapter14: The Phoenix GPS

Receiver for Rocket and Satellite Applications – An Example for the Successful Utilization of COTS Technology in Space Projects -- Chapter15: Simulation-based Radiation Hardness Assurance for ATHENA-WFI -- Chapter16: COTS for Deep Space Missions.

Sommario/riassunto	This book provides readers with invaluable overviews and updates of the most important topics in the radiation-effects field, enabling them to face significant challenges in the quest for the insertion of ever-higher density and higher performance electronic components in satellite systems. Readers will benefit from the up-to-date coverage of the various primary (classical) sub-areas of radiation effects, including the space and terrestrial radiation environments, basic mechanisms of total ionizing dose, digital and analog single-event transients, basic mechanisms of single-event effects, system-level SEE analysis, device-level, circuit-level and system-level hardening approaches, and radiation hardness assurance. Additionally, this book includes in-depth discussions of several newer areas of investigation, and current challenges to the radiation effects community, such as radiation hardening by design, the use of Commercial-Off-The-Shelf (COTS) components in space missions, CubeSats and SmallSats, the use of recent generation FPGA's in space, and new approaches for radiation testing and validation. The authors provide essential background and fundamentals, in addition to information on the most recent advances and challenges in the sub-areas of radiation effects. Provides a concise introduction to the fundamentals of radiation effects, latest research results, and new test methods and procedures; Discusses the radiation effects and mitigation solutions for advanced integrated circuits and systems designed to operate in harsh radiation environments; Includes coverage of the impact of Small Satellites in the space industry.