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## Fundamentals of the Pulsed-Laser Technique for Single-Event Effects Testing

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**Abstract:**

Carrier generation induced by pulsed-laser excitation has become an essential tool for the investigation of single-event effects (SEEs) of micro- and nano-electronic structures. The qualitative capabilities of this approach include, among others, sensitive node identification, radiation hardened circuit verification, basic mechanisms investigations, model validation and calibration, screening devices for space missions, and fault injection to understand error propagation in complex circuits. Recent effort has built upon the success enabled by these qualitative benefits, and has focused on putting the laser SEE approaches on a more quantitative basis. This presentation will present the basic physics associated with the single-photon and two-photon excitation processes, as well as numerous case studies.

**Short Bio:**

Dale McMorrow received the Ph.D. degree in Physical Chemistry from The Florida State University. His graduate studies focused on the role of intermolecular structure and dynamics in shaping the excitation and relaxation processes of molecular species. He joined the US Naval Research Laboratory in 1989, and presently is head of the Photophysics and Radiation Effects Section. His current research interests include the development, characterization, and application of linear- and nonlinear-optical techniques for simulating single-event phenomena in microelectronic devices and complex integrated circuits. Dr. McMorrow is a Fellow of the IEEE and a Senior Member of the Optical Society of America.

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