

18th International School on the Effects of Radiation on Embedded Systems for Space Applications (SERESSA)

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Radiation Mitigation Techniques for Mixed-Signal Circuits

Tuesday 6 December 2022 13:30 (50 minutes)

This talk overviews of basic and state-of-the-art approaches for the mitigation of radiation effects in analog and mixed-signal (analog + digital) circuits. The hardening of such components is typically thought to require a “brute force” approach; that is, area and power are often sacrificed through the increase of capacitance, device size, and current drive. Moreover, there are no standard metrics for radiation effects in analog and mixed-signal circuits as the responses are dependent on the circuit topology, implementation, operating mode, and technology. This presentation addresses these challenges by classifying various techniques based on a few underlying principles and illustrates how these mitigation principles can be manifest in topology-specific examples.

Presenter: LOVELESS, Daniel (University of Tennessee Chattanooga)