

# SERESSA 2022

## Fundamental Mechanisms of Non-Destructive SEEs in Devices and Circuits

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### Abstract:

This talk will present the basic mechanisms responsible for SEEs, starting with the interaction of a particle with a solid to excite electrons into mobile states. The next step is the movement of charge to a sensitive node, where it is collected by a junction electric field and causes a voltage disturbance in the circuit that ultimately corrupts data to form an SEE. Emphasis will be on non-destructive SEEs (SEUs and SETs) that appear as corrupted data or signals. Topics to be covered include the effects of bias, temperature, and operating frequency. Mitigation approaches to eliminate SEEs will be addressed.

### Short Bio:

Stephen Buchner received the BA degree from Princeton University and the PhD from the University of Pennsylvania, both in Physics. His initial work was directed at using pulsed-laser light to simulate ion-induced SEEs. He has worked at Martin Marietta (now Lockheed Martin), NASA and the US Naval Research Laboratory, where he vetted parts for several programs. He has been an associate editor for IEEE Transactions on Nuclear Science, has presented two short courses at NSREC, and has co-authored over 200 papers, receiving several Best Paper awards at NSREC. He is currently retired and works as a consultant for NRL.



### Organizers:

