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# SEU Protection for High-Reliability Flash File Systems

*Fringe Presentation*

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**Abstract.** Single Event Upsets (SEU) are a primary reliability concern for electronics in high radiation, highly hostile environments such as space. In the case of Field Programmable Gate Arrays, the concern is firstly that data stored in RAM can be corrupted, and secondly that configurable logic blocks can become damaged or corrupted. In this talk we will present our considerations of this problem in the context of an SRAM-based high reliability flash file system. We will firstly demonstrate our test harness where we simulate the injection of SEUs into our FPGA. We will then discuss how we propose to build a self repairing configuration using triple modular redundancy and partial dynamic reconfiguration. Finally we will discuss how the reliability of the system may be tested and measured such that it can be used with confidence in either data acquisition or control system applications in rad-hard environments.

**Keywords.** file system, flash, FPGA, reliability, SEU.