SRAM 型 FPGA 多频度刷新器实现

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摘　要：在辐射环境中，SRAM 型 FPGA 会受到单粒子翻转（SEU）的影响导致电路配置帧信息错误，而各配置帧受影响的关键程度各不相同.刷新是将正确配置帧写入 FPGA 修复 SEU 的方法，为了提高刷新的针对性，提出了一种基于关键度的多频度刷新地址序列生成算法并实现了刷新器硬件.根据各配置帧受 SEU 影响的关键度，对不同的帧实施不同的刷新频率，并对生成的刷新序列的优劣进行了分析.

关键词：单粒子翻转；刷新；多频度；FPGA

Implementation of multi-frequency scrubber on

SRAM-based FPGA

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Abstract：In the radiation environment, SRAM-based FPGA will be affected by single event upsets(SEU) resulting in errors in configuration frame, and the extent of each configuration frame affected varies. In order to improve the pertinence of the scrubbing, a key-degree-based multi-frequency scrubbing address generation algorithm is proposed and the hardware of the scrubber is implemented. According to the degree of each configuration frame affected by SEU, different scrubbing frequencies are implemented for different frames, and the generated scrubbing sequence is also analyzed.

Key words：single event upsets；scrubbing；multi-frequency；FPGA

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