技术及应用

质子核反应二次粒子引起的静态存储器单粒子翻转截面计算

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摘要　研究建立了质子单粒子翻转截面计算方法。基于蒙特卡罗软件Geant4，计算分析了不同能量质子核反应产生二次粒子对有效体积带来的影响，确定了有效体积大小。计算了静态随机存取存储器的质子单粒子翻转截面和多位翻转截面。计算结果在趋势上与双参数公式所预言的相符合，并可得到很高能量质子引起的极限截面；在较低能段的数据与文献的理论和实验值相符。

关键词　质子　有效体积　单粒子翻转截面　多位翻转截面

分类号

扩展功能

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Single Event Upset Cross Section Calculation for Secondary Particles Induced by Proton Using Geant4

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Abstract Based on Monte-Carlo software Geant4, a model for calculating the proton single event upset (SEU) cross section of SRAM cell was presented. The secondary particles induced by protons were considered and effective sensitive regions were determined according to the range of the secondary particles. The single event upset and multiple bits upset (MBU) cross sections for protons with different energy were calculated. The results are in agreementwith the theoretical and experimental data.

Key words proton   effective   sensitive   region   single   event   upset   cross   section   multiple   bits   upset   cross   section

DOI

通讯作者