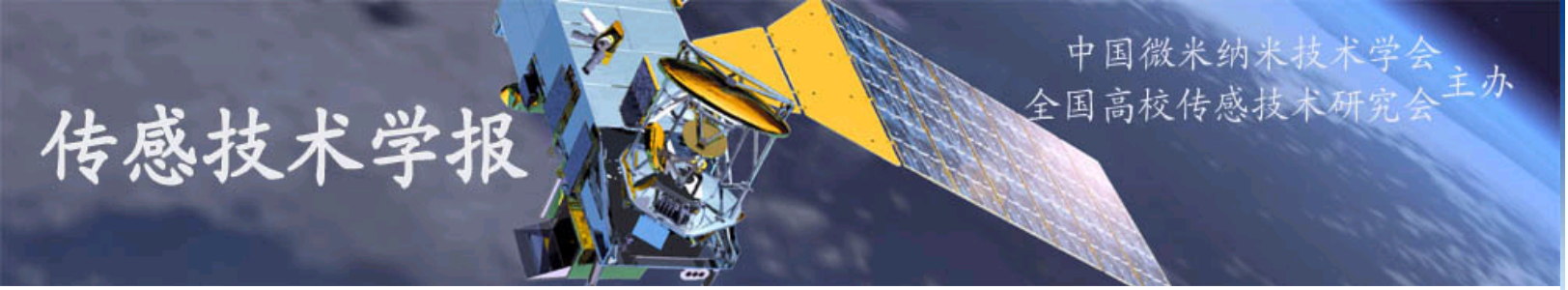

磁通门的数值分析与HSPICE仿真

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摘　要：

针对电压源激励和非正弦波激励在传统分析计算中存在的难题，提出了一种基于HSPICE的磁通门计算和仿真方法。磁通门铁芯用考虑磁滞现象的JA-Brachtendorf模型描述，而传统的JA-Brachtendorf模型参数的提取方法需要很多实验数据。本文运用一种简单的计算方法利用较少的试验数据先得到JA模型的数据，再由JA模型数据得到JA-Brachtendorf模型的参数。最后通过实例用HSPICE仿真考察电压源激励方式下磁通门各种物理量的波形、量值, 与实验结果符合得很好。

关键词：磁通门传感器; 磁滞回线; JA-Brachtendorf模型; HSPICE

Numerical Analysis of the Fluxgate Response Using HSPICE

Author's Name:

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Abstract:

Aiming at solving the problems of voltage source excitation and non sine wave excitation in traditional analysis, a method for simulating fluxgate sensor using HSPICE is presented. JA-Brachtendorf model is chosen as the mathematical model for the core. It is difficult to extract parameters of the JA-Brachtendorf model from measured values. Therefore, a simple method for parameter extraction is given. This method needs a little experimental data. At last, HSPICE simulation for voltage source excitation is performed. Relevant waveforms are presented. Experiment results confirmed the validity of the method.

Keywords: fluxgate sensor; hysteresis loop; JA-Brachtendorf model; HSPICE

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