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技术及应用

EAST积分器系统的设计

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摘要 在核聚变实验中，积分器是还原微分信号的基本手段。长时间低漂移积分器系统的研制是托卡马克实验中的重要环节。以差分式积分器为核心，结合线性隔离技术、程控放大器技术和嵌入式以太网通信技术，设计实现了EAST（Experiment Advance Superconductor Tokamak）积分器系统。提出的系统整体标定方法进一步提高了该积分器系统的精度。性能测试表明，在增益为1时，该积分器在100 s内的积分漂移小于10 mV，满足了当前EAST实验的需求。该积分器系统已投入EAST的实验中，并取得了良好的运行效果。

关键词

托卡马克 积分器 隔离 程控 标定

分类号

Design of Integrator System on Experiment Advance Superconductor Tokamak

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Abstract In fusion experiments, the integrator is a fundamental method to recover differential signals. Developing a longtime low-drift integrator system is very important for the Tokamak experiments. Based on the differential integrator, combining linear isolation technology, remote control programmable amplifier technology and embedded Ethernet communication technology, the integrator system on the Experiment Advance Superconductor Tokamak (EAST) was designed. A kind of global calibration method was presented, and it improved the accuracy of the integrator system. The test results show that, when the gain is 1, the integration drift is less than 10 mV within 100 s, which meets current demand of the EAST experiments. The integrator system has been used in the experiment on the EAST, and achieved good operating results.

Key words Tokamak _ integrator _ isolation _ remote control _ calibration

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