

## 一种多核处理器中断控制器的设计

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**摘要:** 为适应多核处理器对中断处理的需求, 基于 Open PIC 协议设计实现了一种多核处理器的中断控制器, 并使用 VHDL 语言对其进行了硬件描述. 该中断控制器作为 APB 从机, 能够根据中断的目标、优先级的配置情况以及处理器核的中断处理情况实现中断在多个处理器核间的自由分配. 本文将中断仲裁、选择和分配进行流水化处理, 从而实现中断的快速准确分配.

**关键词:** 中断仲裁; 中断选择; 中断分配; 流水

### Design of An Interrupt Controller for Multi-core Processor

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**Abstract:** To meet the needs of multi-core processor for interrupt handling, this paper designs and implements an interrupt controller for multi-core processor based on the Open PIC protocol. The structure of the interrupt controller is described by VHDL. As a slave of Advanced Peripheral Bus (APB), this interrupt controller can dispatch interrupts based on the interrupts' destination and priority, the interrupt handling of the processor cores is also considered. With the pipeline of interrupt arbitration, selection and dispatch, this interrupt controller can dispatch interrupts quickly and accurately.

**Key words:** interrupt arbitration; interrupt selection; interrupt dispatch; pipeline

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