ARINC429 总线发送任务数据防冲突算法研究

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摘　要：在航空电子系统测试与仿真验证过程中，针对利用一条 ARINC429 总线进行多个 Label 号的周期性定时发送任务时，可能导致由不同数据字组成的发送任务在时间轴上产生时间冲突的问题.本文首先对在一根 ARINC429 总线上发送的任务信号之间，可能造成的时间冲突问题的时间区间展开研究，提出一种基于最小公倍周期与最大公约时间片的任务优化规划方法.通过对一条 ARINC429 总线上待发送的任务信号进行规划，解决了 ARINC429 在发送多任务时的单总线冲突问题的同时提高了总线利用率.

关键词：航空电子系统；仿真验证；最小公倍周期；ARINC429;任务规划;总线冲突;

Research on Anti-collision Algorithm for Data of Transmission Tasks on ARINC429 Bus

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Abstract：In the process of testing, simulating and verifying the avionics system, the problem that different transmission tasks which consist of diverse data and words cause time collisions on the time axis may happen when an ARINC429 bus is used to carry out the periodic and time transmission tasks of multiple Labels. Firstly, in this paper, a research concerning the time interval of the time collisions which might be caused among the task signals transmitted on an ARINC429 bus was conducted. Secondly, a task planning method based on the least common multiple period and the time slice with the greatest common divisor was proposed. Lastly, by carrying out the planning of the task signals to be transmitted on an ARINC429 bus, the single-bus collisions in the transmission of multiple tasks on an ARINC429 bus were solved and the utilization rate of the bus was improved at the same time.

Key words：Avionics system;Simulation;Least common period;ARINC429;task planning; bus collision

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