装载机线控转向系统硬件在线回路仿真

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关键词:　　装载机 线控转向 转向系统 硬件在线回路仿真

摘　要:　　设计了装载机线控转向技术硬件在线回路仿真系统并介绍了其组成工作原理,采用比例溢流阀加载的方式对系统进行模拟加载。利用传递函数法建立了仿真系统的数学模型,并在Matlab中对其进行了仿真与PID参数的调整。利用该硬件在线回路仿真系统分别对不同的输入信号及不同负载条件下的响应进行了实验,实验结果表明,采用比例溢流阀加载的方式可以较好地对系统进行模拟加载,线控转向技术在装载机上应用是可行的。 The composing and the function of every part of hardware-in-the-loop simulation system of steer-by-wire technologies on wheel loader were presented. The proportional relief valve to simulate the load of the system was introduced. Making use of the means of transfer function, the mathematics model of the system was built, and with the model, the system has been simulated, then the PID parameters in Matlab were regulated. An experiment was carried out on the hardware-in-the-loop simulation system to test the response with different input signals and loads. The result showed that it is well simulated the load by means of proportional relief valve, validated the feasibility of the use of steer-by-wire technologies on wheel loader.

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