

A new terminal sliding mode control for bridge cranes

ABSTRACT

In different transportation tasks of bridge cranes, the mass of the load and the cable length are different. To solve this problem, this paper designs a model-free adaptive non-singular terminal sliding mode controller. Specifically, the bridge crane model is changed first, and then a suitable non-singular terminal sliding surface is selected. The adaptive rate is introduced in the design of the controller, so that the driving force is continuous and does not require information of system parameters. The Lyapunov theorem proves that the system is stable. Finally, simulation experiments verify the effectiveness of the algorithm proposed in this paper.