

Research on Hybrid Active Magnetic Bearing Control Method Based on Particle Swarm Optimization Fuzzy-PID Controller

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Abstract

This paper aims at increasing the control effect. In this paper, a fuzzy PID control algorithm is used to control the hybrid magnetic bearings(HMBS) with complex and multivariate characteristics. And the particle swarm optimization (PSO) algorithm is combined to optimize the scale factors of the fuzzy controller to solve the problem of fixed parameters of the fuzzy controller, which leads to the limitation of control accuracy. The simulation of the HMB in Simulink, comparing PID and fuzzy PID control, shows that after the optimization of the PSO algorithm, the system response is quick and the overshoot is minimal, and better control results are achieved in the process of rotor displacement control of the HMB support.

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