

عنوان مقاله:

Optimization of PID Parameters for Mine Hoisting DTC System Using a New Parallel Chaos Optimization Algorithm

محل انتشار:

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خلاصه مقاله:

Based on parallel chaos optimization theory a novel optimization design scheme of PID speed controller parameters is proposed for the mine hoist direct torque control (DTC) system in this paper. The strategy of using a new Parallel Chaos Optimization Algorithm with the number of variables reduced, for optimizing PID controller parameters is discussed. This algorithm has satisfied global search adequacy, convergent probability and convergent speed and the search speed of this algorithm is very excellent. so that, According to the ergodicity and random characteristics of chaos dynamics, we optimize the PID controller parameters in real time with this algorithm, in order to make the mine hoist move stable in different operation conditions. The theory analysis and simulation results show that the design method of PID controller optimization parameters with this algorithm has some virtues of the fastest response time and small overshoot compared with the traditional tuning method and the method of chaos optimization PID controller.

کلمات کلیدی:

parallel chaos optimization, PID parameters, global search adequacy, mine hoist, DTC system

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