

Benchmark Problem on Control System Design of Hard Disk Drive with a Dual-Stage Actuator

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Abstract:

This open invited track aims to present various control system design approaches for hard disk drives with dual-stage actuators. Authors are requested to evaluate the control performance of the proposed method using the simulation program in the hard disk benchmark problem. This enables us to make a fair comparison of the control performance of the proposed methods. Not only regular papers but also discussion papers are acceptable in this invited track.

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Detailed description of the topic:

In recent hard disk drives, a dual-stage actuator has been employed to achieve higher positioning accuracy and faster access speed. A voice coil motor and a piezoelectric element are generally used in the first and second actuators. Since the plant is a dual-input and single-input system, the control system design becomes more difficult compared to conventional ones with a single-stage actuator. Therefore, a working group of the institute of electrical engineers of Japan (IEEJ) has renewed the HDD benchmark problem with a single actuator released in 2006 to handle a dual-stage actuator. It can provide researchers with a unified reference model to perform a fair evaluation of the control performance. The benchmark problem is written in MATLAB code, and it can be downloaded from the following link:

http://www2.iee.or.jp/~dmec/committee/DMEC1005/dsa_HDD_bench_e.html.

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