

Modelling and Simulation of LQR and LFSV Controllers in the Magnetic Levitation System (MLS)

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Resumen

In this article a control analysis in state variables is presented, applied to the nonlinear Magnetic Levitation system (MLS), which consists in keeping objects suspended in the air without any mechanical contact through the interaction of magnetic force. The design of Linear Quadratic Regulator (LQR) and Linear Feedback in State Variables (LFSV) controllers is implemented with the aim of comparing the results which guarantee a better stability performance in the system. The mathematical representation of the nonlinear and linearized model of the MLS plant is examined through the design of algorithms and simulation in Simulink-Matlab. In this way, the behavior of the system when there are perturbations and input changes is contrasted, with the priority of exerting a low control action as parameter of the system to be optimized.

Palabras clave

Linearization, Stability, State observer, Controllers LQR and LSFV

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