H_infinity controller design to control the single axis magnetic levitation system with parametric uncertainty

ABSTRACT

In this study the force control design of single axis magnetic levitation system using H_infinity controller is presented. First, the system dynamics are linearized and described in transfer function form. Second, the magnetic force is regulated using H_infinity controller to achieve robust stability, disturbance/noise rejection and asymptotic tracking. A multiplicative unstructured model extracted from the parametric uncertainty is used for H_infinity control design. The obtained results showed that robust stability and performance have been achieved. On the other hand, an improved and more reliable time response compared with previous work also has been achieved in this study.