عنوان مقاله:

MAGNETIC LEVITATION USING SLIDING MODE CONTROL FOR ACTIVE MAGNETIC BEARING SYSTEM

محل انتشار:

چهاردهمین کنفرانس سالانه مهندسی مکانیک (سال: 1385)

تعداد صفحات اصل مقاله: 6

نویسندگان:

Yousef Hojjat - *Assistant professor; Department of Mechanical Engineering, Tarbiat Modares University, Tehran, Iran*

Hossein Mousavi - *Students of M.Sc., Tarbiat Modares University*

Mohamad Sheikhi - *President of PhD, Tarbiat Modares University*

Mohamad Karimi - *M.Eng, graduate from Tarbiat Modares University*

خلاصه مقاله:

This paper presents the analysis, design, manufacturing, and control of active magnetic levitation systems for a rigid rotor. This system will act as a part of an active magnetic bearing system. In this system the magnetic field's effects has been analyzed and a proper setup has been designed and produced to experience what had been analyzed. A sliding mode controller design scheme is proposed to compensate for the nonlinear effects of the levitation system. By that no primary evaluation of the system is needed and hence a robust control scheme is achieved. An electromagnetic actuator and a rigid rotor comprise the system and controller unit includes IR sensors, a differential circuit, and an amplifier circuit. This nonlinear system takes into account the dynamics of rotor and the characteristics of the nonlinear electromagnetic suspended system. The experimental results show that the system exhibits a periodic motion and demonstrates adequate accuracy and robustness when operating under sliding mode control.

کلمات کلیدی:

Active magnetic bearings (AMB) - Sliding mode control - Magnetic levitation