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Active Magnetic Bearing Project For a Satellite Reaction Wheel

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Abstract.
In this paper, the development of a novel active magnetic bearing (MB) system for reaction wheels applicable in satellite attitude control. The proposed bearing has four degrees of freedom passively stable (EMB) with one pair of passive permanent magnet ring, two degrees of freedom (AMB) are actively stabilized by eight magnetic poles. The magnetic model of both EMB and AMB are present and they equations of force-current, and force-position are analyzed by the magnetic circuit approach and by finite element method. With the forces curves we present one non-linear dynamic model for the MB, and a control system for it.

Keywords: *Active Magnetic Bearing, Reaction Wheel, Attitude Control*