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## ROBUST ATTITUDES CONTROLLER DESIGN FOR LEO SATELLITE WITH ORBITAL PERTURBATIONS

**Abstract**

An applications such as communication, defense, remote sensing, broadcasting and much more, satellites in LEO orbits are preferred for their close proximity to earth(200 km to 2000 km above earth surface).At such altitudes, the satellite is bound to experience various forces which cause perturbations. Eventually these perturbations alter the orbit's path and push them out of the desired orbit path causing them to either stray away or towards earth. Perturbations most influential at such heights are aerodynamics drag, magnetic field of earth, solar pressure from sun and Non-spherical shape of the earth.in order to counter these perturbations various techniques have been proposed, one such technique explained in this paper. The proposed system is a design of a system which utilizes and shows a study of various controllers (like PID, linear controllers, nonlinear controllers etc.) and design of a high pointing accuracy system in order to maintain the satellites orientation. The system is primarily designed using MATLAB and SIMULINK in order to stimulate and add different perturbations and forces on the satellite system.To improve the pointing accuracy and efficiency of the said system modern control theory methods such as h-infinity/p-meu would be used in order to make the system much more robust.