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Stability Analysis of Satellites in LEO and Geo using IRNSS receiver

The study focuses on the effects of various parameters on the satellite orbits. It aims to determine satellite stability in both Low Earth Orbit (LEO) and Geostationary Orbit (GEO) using data from the Indian Regional Navigation Satellite System (IRNSS) at Jain University. This method is used to determine the stability by collecting data on the satellite positions over 6 months and monitoring changes in their positions. Subsequently, the factors that cause these changes including solar radiation pressure, geomagnetic disturbances, thruster firings, impacts from micrometeoroids, and gravitational waves will be addressed.

Through a systematic data collection and analysis method, graphs will be plotted to illustrate how satellite positions fluctuate under different conditions. These graphs will support the derivation of mathematical models and equations that can predict and adjust satellite positions with greater precision and efficiency in response to the observed variations. The research aims to improve both theoretical models and practical methods for satellite position management, leading to more robust and cost-effective satellite systems. This will enhance the reliability and extend the operational lifespan of space missions.

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