Paper ID: 67210
student

IAF ASTRODYNAMICS SYMPOSIUM (C1)
Interactive Presentations - IAF ASTRODYNAMICS SYMPOSIUM (IP)

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STUDY OF ORBITAL MECHANICS PARAMETER USING LAPLACE TRANSFORM.

Abstract

In developing spaceflight, appointment, and disturbed satellite systems, which play an essential role in space missions, it is of considerable significance to find and simulate the relative movement problem between satellites or spacecraft. Orbital parameters are critical for space mission planning. A proper understanding of space orbital mechanics is essential from sending a satellite to space or studying the planets' movements. Newton's orbital mechanics law is primarily being utilized to obtain satellite characteristics in general. However, there is another undiscovered technique in old Vedic writings that yields comparable outcomes. After analyzing the patterns in the texts, they looked like the Laplace function. This work presents a new technique for accurately resolving a deputy (follower) object relative movement equation regarding a chief (leader) object, where both revolve around the central body in elliptical orbits utilizing Laplace transform. This project aims to study orbital mechanics by recreating the orbital equation using Laplace transform with respect to different orbital parameters like true anomaly(), eccentricity(e), orbital period(T), etcetera and compare the results with the results of the conventional method. We shall use Kepler's assumptions to obtain our movement equations, which in turn have undergone linearization. This research aims to examine orbital parameters utilizing transform Laplace and compare the findings with the results of conventional techniques. The reason for the computation for orbital parameters should be a simple and less time-consuming procedure. This project aims to study orbital parameters using Laplace transform, and the results will be compared with the results from conventional methods. The motive is to use a simple and less time-consuming process for calculation for orbital parameters. The proposed method could be a convenient and less complex way to calculate orbital parameters. Graph formation, instantaneous value calculation and average value calculation.