

**ANALYTICAL ORBIT PREDICTION FOR HIGH
ECCENTRICITY ORBITS WITH OBLATE ATMOSPHERE USING
UNIFORMLY REGULAR KS CANONICAL ELEMENTS**

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Abstract

A non singular analytical theory for orbit predication of artificial satellite having high eccentricity orbit under the influence of oblate atmosphere is developed in terms of uniformly regular KS canonical elements. The fourth order series expansion includes the new independent variable λ and c . Only two of the nine equations are analytically solved to obtain the solution. The developed theory is compared with the numerically integrated values as well as fourth order KS analytical theory for 1000 revolutions. The comparisons shows the superiority of the present solution over the KS theory for a wide range of perigee altitudes, eccentricities and inclinations, which establishes that the present theory is one of the best analytical theories.