

STABILITY OF THE COLLINEAR POINTS WITH PERTURBING FORCES IN THE RELATIVISTIC RESTRICTED THREE BODY PROBLEM (R3BP)

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The objective of this paper is to investigate the locations and stability of the collinear points within the framework of the post-Newtonian approximation by taking into consideration the oblateness of the bigger primary. The numerical results of this study related to Jupiter-Satellite systems and Saturn-Satellite systems show that the points L_1 and L_2 move towards the smaller primary due to oblateness and relativistic factors while L_3 moves away from the bigger primary due to oblateness. Also the locations of these points are drawn versus the mass ratio μ and it is observed that the point L_1 moves away from the smaller primary for an increasing mass ratio while L_2 moves towards the bigger primary when the mass ratio increases. The point L_3 moves away from the bigger primary when the mass ratio increases. It is also noticed that only point L_2 is significantly affected by the relativistic effect when varying the mass ratio. The collinear points are found to be unstable due to the presence of positive real roots.

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