



Optimal Maneuvers Using a Three Dimensional Gravity Assist

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Abstract: In the present paper the swing-by maneuvers are studied and classified under the model given by the three-dimensional restricted three-body problem. The modification in the orbit of the spacecraft due to the close approach is shown in plots that specify from which type of orbits the spacecraft is coming and to which type it is going. The results generated here are used to solve optimal problems, such as finding trajectories that satisfy some given constraints (such as achieving an escape or a capture) with some parameters being extremized (position, velocity, etc...).

Keywords: *Astrodynamics; swing-by; orbital maneuvers; gravity-assist; restricted problem.*

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