

LEO satellite orbit maneuvers for increasing resolution of space image

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In modern days, the importance of satellite for the military reconnaissance and mapping has been increased. Specifically, today's wars have proved that the image by the military reconnaissance satellite is one of the crucial and determinant factors for the intelligence support. This study presents an optimal orbital descending method for improved image resolution of LEO satellites. Using the Lambert's theorem, satellite is transferred from 500~1,500km to 200km. Comparing the required velocities(ΔV) for the orbit maneuvers, optimal orbital transfer strategy is obtained, and the rates of fuel consumption applied are calculated. The results can be used for the determination of the satellite capabilities for the military reconnaissance missions by comparing the results from the STK Tool and those from present study, the accuracy of the result obtained is examined. For the future work, the studies on the non-coplanar orbital transfer should be executed. These studies may be efficiently used for mission designs and the operations of the military reconnaissance satellites.