World Academy of Science, Engineering and Technology
International Journal of Aerospace and Mechanical Engineering
Vol:11, No:09, 2017

Some Aspects on Formation Initialization and Its Maintenance of Leo Satellites

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Abstract : Study of multi-satellite formation flight systems has drawn wide attention recently due to so many potential advantages. The present work aims to model the relative motion dynamics in terms of change in classical orbital parameters between the two satellites-chief and deputy- under Earth's oblateness effect. The required impulsive thrust control is calculated to minimize these orbital parameter changes. The formation configuration is initialized by selecting a set of orbital parameters for the chief and deputy satellites such that bounded motion is maintained for a long time in a J_2-invariant relative non-circular orbit between the satellites. The solution of J_2-modified Hill's equations is also derived in this paper.

Keywords : satellite, formation flight, j2 effect, control
Conference Title : ICUSAVS 2017 : International Conference on Unmanned Spacecrafts and Air Vehicle Systems
Conference Location : Madrid, Spain
Conference Dates : September 11-12, 2017