conferenceseries.com

3rd International Conference and Exhibition on

Satellite & Space Missions

May 11-13, 2017   Barcelona, Spain

Hamiltonian model of formation flying satellites in the critical circular orbits

Shaheera A Altalhi and **Magdy I El-Saftawy**
King Abdulaziz University, KSA

Formation flying of multiple satellites is a progressing technology with many applications. The characteristic of the mission orbit and dynamics of relative motion is very important to design the formation-flying mission. In this work, the motion of formation flying satellites is considered under the effects of second order zonal harmonics in an equatorial orbit. The solution of relative motion in the frame of Hamiltonian mechanics was obtained. The formula of second-order conditions that guarantee the drift rates of two, or more, neighboring orbits is derived. All the possible conditions of formation flying are discussed. These conditions have been modeled in the case of the reference orbit is critical with different inclined orbits for follower satellites. The results show all possibilities of choosing mean orbital elements of leader satellite and differences in momenta between leader and follower satellites' orbits.

Biography

Shaheera A Altalhi completed her MSc in Space Science in 2015 at King Abdul-Aziz University, Saudi Arabia. She participated in several conferences. Her research interest is in Spacecraft Motion, Formation Flying Satellite and Space Dynamics. She has published a book entitled *An Analytical Study of Invariant Relative Polar Orbit Conditions* in 2016.

saltalhi0004@stu.kau.edu.sa

Notes:

J Aeronaut Aerospace Eng
ISSN: 2168-9792 JAAE, an open access journal

Satellite 2017
May 11-13, 2017

Volume 6, Issue 2 (Suppl)

Page 71