

IAF ASTRODYNAMICS SYMPOSIUM (C1)
Late Breaking Abstracts (LBA) (LBA)

Author: Dr. Sergey Trofimov

Keldysh Institute of Applied Mathematics, RAS, Russian Federation, sertrofimov@yandex.ru

Ms. Irina Glazunova

Keldysh Institute of Applied Mathematics, RAS, Russian Federation, glazunova.ia@phystech.edu

Ms. Anastasia Tselousova

Keldysh Institute of Applied Mathematics, RAS, Russian Federation, tselousova@phystech.edu

SINGLE-LAUNCH DEPLOYMENT OF LUNAR CONSTELLATIONS FROM A SUN-ASSISTED
LUNAR TRANSFER TRAJECTORY**Abstract**

Projects of building the lunar infrastructure are being actively developed now. Further exploration of the Moon and circumlunar space requires the establishment of a satellite communication and navigation system based on the distributed group of spacecraft. It raises a need for designing the most economical way to deploy the lunar constellation in several orbital planes. Recently, Stefano Carletta proposed a strategy for single-launch lunar constellation deployment from a low-energy trajectory passing close to the Earth-Moon L_1 point. In our work, another low-energy deployment approach is suggested based on the ballistic (Sun-assisted) lunar transfer. It is proposed to launch a single platform carrying all the spacecraft in a BLT trajectory and then deploy them into different orbital planes by applying small impulses in a distant part of trajectory. Due to the high sensitivity of BLT trajectories, the deployment cost appears to be several times lower comparing to Carletta's single-launch scheme.