

Dynamics of 'jumping' Trojans: Perturbative treatment

V. Sidorenko¹

¹Keldysh Institute of Applied Mathematics RAS, Moscow, RUSSIA

The term "jumping" Trojan was introduced by Tsiganis et al. (2000) in their studies of long-term dynamics exhibited by the asteroid (1868) Thersites: as it turned out, this asteroid may pass from the librations around L4 to the librations around L5. One more example of a "jumping" Trojan was found by Connors et al. (2011): librations of the asteroid 2010 TK₇ around Earth's libration point L4 preceded by its librations around L5. We explore the dynamics of "jumping" Trojans under the scope of the restricted planar elliptical three-body problem. Via double numerical averaging, we construct evolutionary equations which describe the long-term behavior of the orbital elements of these asteroids.

Acknowledgements: This work was supported by the grant of the Russian Academy of Sciences Program: "Fundamental problems of research and exploration of the Solar system".