
The influence of anode layer thruster azimuthal ion deviation on the ballistics of spacecraft

© E.V. Vorobiev, D.V. Dukhopelnikov, S.G. Ivakhnenko,
M.K. Marakhtanov

Bauman Moscow State Technical University, Moscow, 105005, Russia

The article considers the occurrence of a torque about the axis of the motor in the anode layer. It is shown that the torque is the result of the azimuthal deflection of the ions in the accelerating channel during the motion of the ions in the radial magnetic field. Impact of the azimuthal variations of the ions in the engine anode layer on the angular acceleration of the spacecraft is considered. Dependencies are obtained that relate to the angular acceleration of the machine with the value of the azimuthal deflection of ions for various operating modes of the engine, weight and size characteristics of the aircraft and various working substances. Methods considered eliminating the influence on the rotation of the spacecraft.

Keywords: *azimuthal deflection of ions, thrust, anode layer thruster, torque.*

Vorobiev E.V., Assistant Lecturer at the Plasma Power Plants Department of Bauman Moscow State Technical University. Sphere of scientific interests: ion plasma technologies, electric rocket thrusters, nanotechnologies. e-mail: evgsparrow@gmail.com

Dukhopelnikov D.V., Ph.D., Assoc. Professor of the Plasma Power Plants Department of Bauman Moscow State Technical University. Sphere of scientific interests: ion plasma technologies, electric rocket thrusters, nanotechnologies. e-mail: duh@power.bmstu.ru

Ivakhnenko S.G., Assistant Lecturer at the Plasma Power Plants Department of Bauman Moscow State Technical University. Sphere of scientific interests: ion plasma technologies, electric rocket thrusters, nanotechnologies. e-mail: ivakhnenko@bmstu.ru

Marakhtanov M.K., Dr. Sci. (Eng.), Professor, Head of the Plasma Power Plants Department of Bauman Moscow State Technical University. e-mail: dim@power.bmstu.ru
