

DILATOMETRIC MICRODRIVE OF SMALL SPACECRAFT WITH RESONANT MICROWAVE ACCELERATOR

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The article contains the research of the authors in the field of jet propulsion systems with low energy consumption of small spacecraft (SSC) of nanosatellite class. The paper presents the concept of a Microdrive combining thermogasdynamic and electrodynamic methods of creating a jet thrust. We are talking about the propulsion system with resonance accelerating system, pre-heated and ionized working fluid. A toroidal volume resonator excited by a low-power solid-state microwave oscillator is considered as an accelerator.

The work has experimental and theoretical components. The experimental part is devoted to the development of a method for transmitting microwave energy to a volume resonator from an oscillator. The theoretical part includes the calculation of the accelerating gap, the dimensions of the toroidal resonator, the estimation of the working fluid velocity after preheating and acceleration.

This work is a continuation of works on creation of methodological bases for design correction engine micro thrust μa with microwave acceleration of the working body.

Keywords: small spacecraft, nitrogen, traction, a resonant cavity, microwave, plasma, the gas passage.

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