Creation of a Prototype Ion Engine and Improvement of Its Performance

Tomsons, Kristers (School: Oskars Kalpaks Liepaja 15th Secondary School)

The aim of the work is to build a prototype ion thruster, find ways to improve its performance, and then put those improvements into practice by changing the thruster itself, to further evaluate the potential of the improved ion thruster, this research motivation was to assess the degree of performance enhancement achieved through modifications and determine the viability of its use in practical settings. Work tasks included reading and analyzing the literature on the ion thruster that are available. Creating an ion thruster prototype, based on a certain drawing. Identifying areas for the thruster that may be improved. Making changes to the thruster's design based on the found opportunities for improvement. Measuring and analyzing the effects of modifications on thruster's performance. The main findings of the study: In the initial theoretical research, the ion engine's operating principle was developed, but in the practical portion an ion engine prototype was built, to which a number of modifications were added. The effects of these changes were then examined. Altering the design of ion engines has the potential to enhance their performance. Factors such as the number of anodes, cathode to anode distance and airflow restriction can significantly impact the ion engine's performance. In conclusion, by implementing different modifications to the thruster it is possible to improve the thruster's thrust however it should be noted that the thruster's thrust was still relatively low even after changes.

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