Investigation of aerodynamic characteristics of lander alternative forms to study Venus

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Currently, creating a spacecraft to continue the fundamental Venus research and, in particular, lander development to study the surface of this planet are becoming actual issue. The article considers different types of lander for the possibility of making maneuverable descent to the Venus surface; a comparative analysis of these landers has been carried out. A lander of the "lifting body" class is considered with improved design characteristics compared to the traditionally used "ballistic descent" class landers. The calculation of the aerodynamic characteristics for the "lifting body" class lander is done by a numerical method based on the Newton's flow theory at hypersonic speeds. Proposed configurations of the lander have a certain aerodynamic quality at hypersonic speeds and are capable of maneuvering and landing in the required areas, the most attractive for research and safe.

Keywords: *lander, aerodynamic shapes, maneuverability of a lander, Venus, hypersonic speed range*

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