
Method for restoring the heading orientation of a spacecraft using the orbital gyrocompass

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At present, the development of algorithms for controlling the angular orientation and stabilization of the orbital spacecraft is one of the most relevant and dynamically developing areas in the field of astronautics and control theory. A special role in the algorithm for reducing the bound coordinate system to the orbital coordinate system is the stage of the heading motion. The current orientation systems, including the orbital gyrocompass, do not have the proper quality of transient processes that would satisfy the requirements of customers. Such systems require solving the problem of reducing the time for constructing OCS in the course channel and improving the quality of the transitional process as a whole. This paper analyzes the "classical" orbital gyrocompassing (OGC) method and shows its shortcomings. A new method to restore heading orientation using OGC is proposed. It significantly reduces the time of transient processes and improves their quality. The graphs reflecting the behavior of spacecraft in the process of restoring the heading orientation using the proposed method are presented.

Keywords: *restoring the heading orientation, orbital gyrocompass, orbital gyrocompassing, spacecraft motion control system, angular motion of a spacecraft, spacecraft orientation, spacecraft stabilization, program course turn*

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