# Parametric analysis of the spacecraft parabolic antenna with a multivariate reinforcement scheme

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*The problem of parametric geometric modeling is solved. The modal analysis of the spacecraft parabolic antenna with a multivariate reinforcement scheme consisting of the system of radial and annular ribs is made. The modal analysis used for determining the fundamental frequency of antenna oscillation as a criterion of structural rigidity was performed in this article by the finite element method in the SolidWorks Simulation package. Simulation of the antenna is carried out by shell finite elements with a parabolic approximation of the displacement field. The parametric model of the antenna takes into account the change in the reflector thickness, the number and thickness of the rib cross sections, as well as the coordinates of the points of attachment of the primary structure to the spacecraft. The results of calculations of the antenna oscillation fundamental frequency at different variants of a design parameter combination are presented. The design solutions providing the required values of structure rigidity are revealed.*

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