
Solution of the inner problem with the occurrence of natural convection in fluids

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The paper considers demands for making calculations of a thermal regime of the spacecraft's instrumentation compartment under the conditions of low gravity. It presents some results obtained by analyzing the convective motions of a viscous heat-conducting fluid or a gas, which occur in the cavities with axes of symmetry, being normal or co-linear to acceleration of the mass forces (and the axis y). Of particular interest are the cavities with elliptical cross-sections: horizontal cylindrical or representing a body of rotation, respectively. A PC program with modifications of the Bubnov—Galerkin method was used. The obtained results correspond to the available data perfectly.

Keywords: *Fourier series, infinite algebraic systems, Boussinesq, Rayleigh, linear spatial disturbances, isoline.*

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