Standing Waves in the Solutions Complete System of Equations of Navier-Stokes

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We consider a complete system of Navier-Stokes [1-4], equations whose solutions describe the one-dimensional flow of a compressible viscous heat-conducting gas at constant values of the coefficients of viscosity and thermal conductivity. As an independent thermodynamic variables selected pressure and specific volume, through which the partial differential equations are written in normal form with respect to time derivatives. Written out solutions is constructed using the Galerkin method as infinite sum of harmonics in the spatial variable, with coefficients depending on time.

It is shown that under conditions of thermal insulation and adhesion to the ends of a segment of a spatial decision variable solutions of the system are the sum of standing waves with multiple frequencies. We obtain a functional dependence of the minimum frequency in the sum of the frequencies of the harmonics included in the initial conditions.

References

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