ON THE CORRECTNESS OF THE statement OF THE PROBLEM OF EXTERNAL ENERGY INPUT INTO A finite REGION OF A GAS

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In the paper, the correctness of the formulation of the problem of external energy input into a limited region of the gas is analytically investigated. The cases of small and strong gas compressions are considered.

The study is based on a one-dimensional system of equations for a three-component gas with ion, electron, and photon energy at the same velocity and density of matter.

The evolution of the systems under consideration is described on the basis of the equations of gas dynamics with energy relaxation between photons, electrons and ions recorded in the variables *t* (time) and *m* (mass coordinate) [1]. The movement comes from the instantaneous or from the distributed *Qe*(*t*) in time energy input.

A parameter is found on which the solution of the system depends. It can vary over a wide range: during gas expansion and compression. The stability of the solution is analyzed for various values of the parameter found. It is shown in which cases the solution will remain limited. The case of absence of radiation.

References

1. Dolgoleva G.V., Zabrodin A.V. "Energy cumulation in layered systems and realization of unstressed compression". Moscow, Fizmatlit, 2004 (in Russian).