

DIAGNOSTICS OF CORONAL PLASMA USING THE EXACT SOLUTION OF THE EVOLUTION EQUATION FOR SLOW MAGNETOACOUSTIC AND ENTROPY WAVES

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Compression waves are actively observed in various regions of the solar atmosphere. The most frequent intensity perturbations associated with the compression of the medium are observed in such magnetic structures as coronal loops. Often the observed intensity perturbation is associated only with slow magnetoacoustic waves and the dispersion equation is used for plasma diagnostics. In a strict sense it is not quite correct, since along with slow waves, entropy waves are also induced in the medium. Thus, the propagation of slow waves occurs against the background of the evolution of another compression mode in the medium. For this reason, application of only dispersive equations can lead to errors in diagnostics of plasma parameters and it is more correct to use the exact solution of the evolution equation.

In this paper, we study the peculiarities of applying exact solutions of the Cauchy problem and the boundary value problem for linear evolution equations describing the spatio-temporal dynamics of slow magnetoacoustic and entropic waves.

This work was supported by the Ministry of Science and Higher Education of the Russian Federation within the framework of the state assignment (projects No. FSSS–2023–0009, FFMR-2024-0017).