

THE EFFECT OF OVERTAKING DISTURBANCES ON THE MOTION OF WEAK SHOCK WAVES IN HIGHLY VISCOUS MEDIUM

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Abstract

The effect of overtaking disturbances on the motion of weak shock waves in highly viscous uniform medium is investigated. Chester-Chisnell-Whitham method is applied to obtain the analytical relations for shock velocity and shock strength for freely propagation of shock. These relations are modified in presence of overtaking disturbances. The effect of overtaking disturbances is included by Yadav (1992) approach. The obtained relations are computed and discussed through tables. Comparison between the results for freely and for overtaking disturbances is made. It is found that the shock velocity and shock strength both decreases as shock advances from flow viscous region to the high viscous region of the medium. A very large change in viscosity coefficient leads to very small perturbation in flow variables. This is due to the large dissipation of energy in the highly viscous medium.

Key Words: Viscous- medium