

Passage of the rarefaction wave through the region of metastable states

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At the phase transition boundary (binodal), there is the kink in the isentrope in the pressure-specific volume coordinates. In normal matter, when a compression shock wave (SW) crosses the contact boundary with a less rigid substance, reflected rarefaction wave (RW) propagates in the opposite direction. The matter in the RW occurs in the region of metastable states, where it behaves anomalously. The formation of the rarefaction SW at initial moments of time and the change of the solution of the RW passing with time are shown. Three, successively changing each other, solutions of the RW passing are marked: 1) the self-similar solution with the maximum and constant pressure difference in the rarefaction SW; 2) the transitional solution with the decrease of the pressure difference in the rarefaction SW; 3) the self-similar solution with the formation of the "binodal layer" - a layer with fixed hydrodynamic parameters (pressure, density, mass velocity, internal energy), except for the speed of sound.