

Mon2.1

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Experimental study into the turbulent mixing transition to a self-similar regime at constant acceleration of the interface of gases

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Experiments on study of the transition to a self-similar regime of different density gases mixing in the Earth's gravity field have been carried out at the OSA facility. A heavy gas was imposed upon a light one. Gases were separated with the Specter-diaphragm. At some moment of time the Specter-diaphragm was destroyed into small-scale fragments by an outer force. The Rayleigh-Taylor instability arose at the formed interface of two different density gases, and a non-stationary zone of turbulent mixing developed. Experiments were performed for two Atwood numbers 0.54 and 0.94. In the experiments there were determined the front mixing trajectories in both the light gas and the heavy one. As a result of the experiments the constant α characterizing the non-dimensional velocity of mixing was determined.