Poster 2 Anuchina et al.

Numerical simulation of Rayleigh-Taylor instability evolution in cylindrical and spherical geometries for the cases of two and three spatial variables

N.N. Anuchina , V.I.Volkov , N.S. Es'kov, O.S. Ilyutina & O.M. Kozyrev

Russian Federal Nuclear Center – Zababakhin Institute of Technical Physics,
Snezhinsk, Russia
v.i.volkov@vniitf.ru
http://www.vniitf.ru

Numerical simulations for cylindrical and spherical geometries are presented, which study linear and non-linear stages of evolution of small perturbations at the interface of two incompressible, non-viscous, non-heat-conducting liquids being under effect of Rayleigh-Taylor instability. Initial perturbations of the interface are considered for two cases: when the flow is described with two and three spatial variables. Results of the numerical simulations of the linear evolution stage for the small perturbations are in good agreement with the analytical laws of small single-mode perturbation evolution, derived in linearized formulation (basic solution is at rest) for cylindrical and spherical geometries. Effect of dimensionality of space and geometry (plane, cylindrical or spherical) on the evolution of perturbations is studied for non-linear stage. Basic characteristics of the difference methods implemented in MAH and MAH-3 software packages used for numerical studies are briefly described.