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Modelling of hydrodynamics instabilities including the non local heat transport MARINA OLAZABAL-LOUME, CELIA Universite Bordeaux I , France, JEAN-LUC FEUGEAS, PHILIPPE NICOLAI, CELIA Universite Bordeaux I, France, JAVIER SANZ, ETSI, Aeronauticos, Univ. Polytechnica Madrid, Spain
— Experimental works [T. Sakaiya *et al.*, Phys. Rev. Lett. 88, 145003 (2002)] have shown that the growth rate of ablative Rayleigh-Taylor instability is well reproduced by the simulation that solves the nonlocal heat transport. Furthermore, it has been recently pointed out [V. N. Goncharov *et al.*, Phys. Plasmas 13, 012702 (2006)]that non local heat transport modifies characteristic lengths needed in hydrodynamic instabilities models. This work presents a new way to take into account the non local effects in hydrodynamic instabilities modelling. The simulations are performed with a code dedicated to the linear stability study of unsteady flows [M. Olazabal-Loumé *et al.*, J. Phys. IV France 133 (2006)]. The code calculates a one-dimensional basic solution and its first order 3D perturbation in Lagrangian formalism. It integrates a multidimensionnal non local model based on the approach of [J-F. Luciani *et al.*, Phys. Rev. Lett. **51**, 1664 (1983)] and [E. Epperlein et al., Phys. Fluids B **3**, 3082 (1991)].

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