# THE DIRECT NUMERIC SIMULATION OF UNSTABLE FLOWS BY PIC-METHOD

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The results of direct numeric simulations (DNS) of unstable flows, obtained by program complexes IGLA[1] and MECH [2] based on PIC method. These algorithms are the modification on Harlow particles method [3, 4].

The development of the instability was seen on the following tasks:

**1.  Spherical shell implosion**

In the problem the low-density gas is compressed by heavy gas shell. At the outer boundary a variety pressure is applied. Calculations have been spent without any 'sub-grid' models of turbulence and adjustable parameters. This problem was formulated in paper by D.L. Youngs and F.J.R. Williams [1] and concerned the problems of inertial confinement fusion (ICF).

**2.  Investigations of unsteady current progress at the implosion gases boundary with energy release**

The means of Relay-Tailor instability progress at the boundary of two energy released gases are investigated in this task. The paper is the continuation of the investigations being held in [6].

The behavior of arising currents depending on different physical factors, particularly, density drop at the boundary, quantity of energy release and it's increasing rate is explored.

The comparative analysis of calculation results obtained by a technique the IGLA  and  MECH. Also the band structures of instabilities is explored [7].

## References

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