



Laboratory of Numerical Analysis and Technical Calculations

Principal goals and activities

- Training and education in simulation of flow, temperature fields, deformation and tension in various systems.
- Investigation of basic research problems
- Investigation of applied and contracted research problems
- Technology support in research and development activities in partnering organisations
- Analyses and test reports for private organisations and government offices

Specific instruments

Software

- Ansys (Ansys, Fluent, CFX, Polyflow)
- Altair (HyperMesh, HyperMath, OptiStruct, RADIOSS, HyperForm)
- OpenFOAM
- SolidWorks, etc.

Hardware

- DELL PowerEdge M1000e (56 cores, 176 GB RAM)
- High-performance workstations (9 units)

General focus of laboratory

Numerical simulation of flow

- Internal and external hydrodynamics
- Stationary and non-stationary calculations
- Variable parameters of flowing media in relation to their temperature, pressure, concentration, etc.
- Non-isothermal calculations, simulation of heat sharing, simulation of heat transfer by radiation
- Laminar and turbulent flow
- Newtonian and non-Newtonian fluids
- Multi-phase flow and cavitation
- Simulation of chemical reactions, burning, mixing
- Simulation of particle transport
- Design of measures and optimization
- Moisture transfer, condensation, evaporation, drying. Numeric simulations and analyses of temperature fields
- Simulation of temperature fields in structures
- Analyses of heat loss (gain)
- Analyses of heating and cooling in technology systems; design of heating and cooling technology
- Simulation and analysis of temperature deformations and heat load of structures

Proposal of new, or optimisation of existing, equipment Proposal or optimisation of technology processes

Analyses of defects and failures

