

# INMOST - A SOFTWARE PLATFORM FOR DISTRIBUTED MATHEMATICAL MODELING

Kirill Terekhov  
Institute of Numerical Mathematics, RAS

We present the INMOST library - a C++ based software platform for parallel mathematical modeling. Platform includes data structures and algorithms for distributed mesh and data representation; automatic differentiation for (block) assembly of residual vector, jacobian matrix and hessian tensor; several parallel linear and nonlinear solvers; preliminary support for complex coupled problems. The platform was extensively used in development of nonlinear finite volume methods for scalar diffusion and advection-diffusion equations. INMOST is used in software with complex physical models such as geomechanics, black oil recovery, hemodynamics, nuclear waste disposal.