

## Parallel Simulation of the Magnetic Moment Reversal within the Josephson Junction Spintronic Model using MPI and OpenMP implementations

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A Josephson junction spintronic model is investigated by means of the two-stage Gauss–Legendre algorithm for numerical solution of the respective system of nonlinear differential equations in a wide range of physical parameters. Parallel implementation is based on the MPI and OpenMP techniques. The simulations have been carried out at the Heterogeneous Platform “HybriLIT” and on the supercomputer “Govorun” of the Multifunctional Information and Computing Complex of the Meshcheryakov Laboratory of Information Technologies, JINR (Dubna). Results of numerical study of the magnetization effect depending on physical parameters, as well as results of comparative analysis of the efficiency of MPI- and OpenMP-based parallel implementations, are presented.

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