



## Vladimir Gurman

(Ailamazyan Program Systems Institute of RAS, Pereslavl-Zalessky, Russia)

### Optimization of Excitation Transfer in a Spin Chain

It is considered the problem of optimization process in a spin chain on the base of Shrodinger equation which Hamiltonian contains a combination of linear and nonlinear controls. It is proposed to apply Krotov global iterative method with preliminary transformation the original problem to the derived problem known from the theory of degenerate problems. In the case under consideration, such a transformation can be performed analytically which actually leads to a new model for representation the processes of oscillatory nature and substantially increases the efficiency of improving iterations. The procedure is demonstrated in computational experiments with the use of visual examples where low dimension versions of the model investigated in [1, 2] are considered.

1. V. Balachandran, J. Gong, Adiabatic Quantum Transport in a Spin Chain with a Moving Potential. Phys. Rev. Lett., 2007. URL:<http://arxiv.org/abs/0712.1628v1>.
2. M. Murphy, S. Montangero, V. Giovannetti, T. Calarco, Communication at the Quantum Speed Limit Along a Spin Chain, Phys. Rev. Lett., 2010. URL:<http://arxiv.org/abs/1004.3445v1>.

26. Juni 2013, 11:00 Uhr

Universität Ulm, Raum N25/4413  
Albert-Einstein-Allee 11, 89081 Ulm

