

Programme

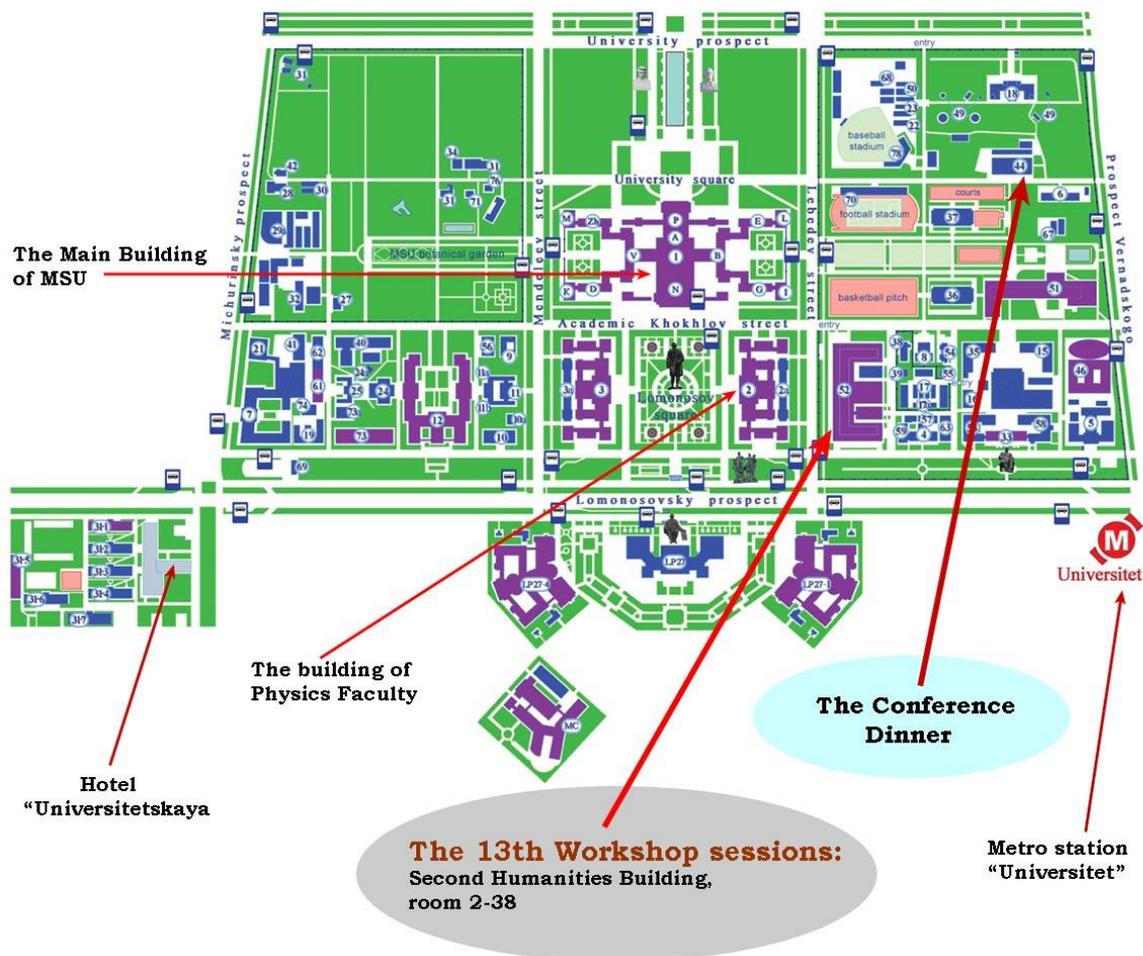
of the 13th Workshop on Numerical Methods for Problems with Layer Phenomena

(Moscow, 06-09 April 2016)

06.04.2016 (Wednesday)

16.30-18.00 – short welcome party (on the participant's desire), free discussions, tea, coffee – room **3-82** (3rd floor) of the Building of **Physics Faculty** (see the scheme).

Scheme of the 13th Workshop



07.04.2016 (Thursday)

09:00-09:40 – registration

09:40-10:00 – opening of the Workshop

Registration and all sessions of the Workshop will be held in the room 2-38 (2nd floor) of the **Second Humanities Building** of MSU (see the scheme).

Organizers provide laptop, data projector and whiteboard for the presentations.

07.04.2016 (Thursday)

Session 1 (chairman – M. Stynes)

- 10:00-10:20 – N. Kopteva *A posteriori error estimates for singularly perturbed reaction-diffusion problems on anisotropic meshes.*
- 10:20-10:40 – V. Andreev *Hölder estimates for a solution of a singularly perturbed convection-diffusion equation in a half-plane.*
- 10:40-11:00 – H.-G. Roos *Error estimation in balanced norms for second order problems.*
- 11:00-11:20 – S. Franz, H.-G. Roos *Robust error estimation for singularly perturbed fourth-order problems.*
- 11:20-11:40 – N. Nefedov, D. Lukyanenko, E. Nikulin, V. Volkov *Asymptotic analysis of singularly perturbed periodic in time reaction-advection-diffusion problems and its use for numerical methods.*
- 11:40-12:00 – coffee-break

Session 2 (chairman – N. Nefedov)

- 12:00-12:20 – G. Shishkin *Computer difference schemes for singularly perturbed convection-diffusion and reaction-diffusion equations in the presence of disturbances.*
- 12:20-12:40 – L. Shishkina *Numerical solution of a singularly perturbed initial-boundary value problem with a Neumann condition for a parabolic equation.*
- 12:40-13:00 – S. Dobrokhotoy, D. Minenkov, V. Nazaikinskii, B. Tirozzi *Analytical-numerical algorithm for the run-up of long waves generated by localized sources on a curvilinear shore.*
- 13:00-13:20 – A. Zadorin *Interpolation formulas for functions with large gradients in a boundary layer.*
- 13:20-13:40 – P. Vabishchevich *A singularly perturbed boundary value problems with fractional powers of elliptic operators.*
- 13:40-15:20 – lunch

Session 3 (chairman – L. Recke)

- 15:20-15:40 – V. Sobolev *Critical cases in control problems with singular perturbations.*
- 15:40-16:00 – E. Shchepakina *Geometric approach to the analysis of singularly perturbed models of biology and optics.*
- 16:00-16:20 – I. Kashchenko *Local dynamics of two-component contrast parabolic systems.*
- 16:20-16:40 – M. Terentyev *Nonexistence and blow-up phenomena in singularly perturbed problems in the case of exchange of stabilities.*
- 16:40-17:00 – coffee-break

Session 4 (chairman – V. Sobolev)

- 17:00-17:20 – N. Levashova, A. Melnikova, S. Bytsura
Internal layers in systems of parabolic equations.
- 17:20-17:40 – M. Davydova, N. Nefedov
The solutions with internal layers in multidimensional problems of the reaction-diffusion-advection type with balanced nonlinearity.
- 17:40-18:00 – S. Aleshin, S. Glyzin, S. Kaschenko
Spatially inhomogeneous solutions of KPP equation with delay.
- 18:00-18:20 – D. Lukyanenko, V. Volkov, N. Nefedov
Some new approaches of dynamic adaptive mesh construction for efficient numerical solving of singularly perturbed equations.
- 19:00 – the Conference Dinner (see the scheme)
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08.04.2016 (Friday)

Session 5 (chairman – G. Shishkin)

- 09:30-09:50 – A. Hegarty, E. O'Riordan *A singularly perturbed convection-diffusion problem posed on a circular domain.*
- 09:50-10:10 – M. Stynes *Error analysis of a finite difference method on graded meshes for a time-fractional diffusion equation.*
- 10:10-10:30 – C. Xenophontos *The Reissner-Mindlin plate model and its numerical approximation.*
- 10:30-10:50 – S. Tikhovskaya *Solving an elliptic problem with regular boundary layers by multigrid method on Shishkin mesh.*
- 10:50-11:10 – A. Xiao, G. Zhang, X. Yi, J. Zhou
Implicit-explicit multistep methods for stiff delay differential equations.
- 11:10-11:40 – coffee-break

Session 6 (chairman – H.-G. Roos)

- 11:40-12:00 – S. Becher *FEM-analysis on graded meshes for turning point problems exhibiting an interior layer.*
- 12:00-12:20 – A. Belov, N. Kalitkin *Numerical solving of Cauchy problems with contrast structures.*
- 12:20-12:40 – I. Belukhina *On mesh approximation accuracy of boundary-value problem for a singularly perturbed equation with one or two small parameters and non-smooth boundary functions.*
- 12:40-13:00 – I. Blatov, E. Kitaeva *Uniform boundedness of Galerkin projection and the convergence of the grid adaptation algorithms for singular perturbed boundary value problems.*
- 13:00-13:20 – T. Ershova *On accuracy of the difference solutions of Dirichlet problem with a discontinuous derivative of the boundary function for singularly perturbed convection-diffusion equation.*

13:20-15:00 – lunch

Session 7 (chairman – N. Kopteva)

- 15:00-15:20** – A. Bykov *Numerical scheme for the pseudoparabolic singularly perturbed initial-boundary problem with interior layer.*
- 15:20-15:40** – M. Dmitriev, B. Dobronets *On the question of the individual optimal difference schemes for ordinary differential equations.*
- 15:40-16:00** – M. Ni, A. Wang *The step-type contrast structure for a quasi-linear singular singularly perturbed boundary problem.*
- 16:00-16:20** – O. Omel'chenko *Spike solutions to singularly perturbed elliptic problems.*
- 16:20-16:40** – L. Recke *Boundary layer solutions to time-periodic singularly perturbed parabolic problems.*
- 16:40-17:00** – V. Butuzov, N. Nefedov, L. Recke, K. Schneider *Asymptotics and stability of a periodic solution to a singularly perturbed parabolic problem in case of a double root of the degenerate equation.*
- 17:00** – Closing of the Workshop
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Poster Session

(07-08 April, room 2-38)

- V. Beloshapko *A singularly perturbed elliptic problem with three-band boundary layer.*
- S. Bytsura, N. Levashova *The solution in the form of a moving front with the system of equations of FitzHugh-Nagumo type.*
- M. Davydova, N. Levashova, S. Zakharova *The asymptotical analysis for the problem of modelling the gas admixture transport in the surface layer of the atmosphere.*
- Zh. Dombrovskaya *FDTD method at the dielectric interfaces.*
- V. Golubenets *Bifurcation analysis of logistic equation with state-dependent delay.*
- A. Kashchenko *Stability of automodel cycles in one equation derived from the laser model.*
- A. Melnikova, R. Argun *Stationary solution with internal layer in one activator-inhibitor system.*
- N. Nefedov, E. Nikulin *Existence and stability of periodic solutions to reaction-diffusion equations in the two-dimensional case.*
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09.04.2016 (Saturday)

- 09:30 – 14.00** – a trip to the park-museum “Kolomenskoye”.
Transfer will be organized at 09:15-09:30 from the “Universitetskaya” hotel or from the Building of the Physics Faculty (details will be specified).