Workshop on Numerical and Symbolic Scientific Computing

September 8-12, 2019

Sunny Day Resort, Varna, Bulgaria

organized by

Institute of Information and Communication Technologies
Bulgarian Academy of Sciences

Institute of Mathematics and Informatics
Bulgarian Academy of Sciences

Laboratory of Information Technologies
Joint Institute for Nuclear Research, Dubna, Russia

Program

Monday, September 09

09:00 – 09:30 **Registration and opening**

09:30 – 10:00 Natalia Kolkovska, Veselina Vucheva, Invariant preserving schemes for Boussinesq type equations

10:00 – 10:30 *Coffee break*

10:30 – 11:00 Alexander Ayriyan, Optimization problem for the heat equation towards an improvement of the "thermal gates" source characteristics

11:00 – 11:30 Ivan Georgiev, Characterization of porous materials by micro-CT scanning and numerical simulations

11:30 – 12:00 Stanislav Harizanov, Efficient digital image processing of scanned homogeneous materials

12:00 – 14:00 *Lunch*

14:00–14:30 Alexander Ayriyan and Jan Busa, Heterogeneous platform "HybriLIT" at Laboratory of IT

14:30 – 15:00 Zarif Sharipov, Algorithm optimization in molecular dynamics simulation

15:00 – 15:30 *Coffee break*

15:30 – 16:00 Nevena Ilieva, Borislav Pavlov, Peicho Petkov, Elena Lilkova, and Leandar Litov, GEANT4 on Large Intel Xeon Phi Clusters: Implementation and Performance

16:00–16:30 Elena Lilkova, Nevena Ilieva, Peicho Petkov, Leandar Litov, Modelling radiation damage in materials

16:30–17:30 Jan Busa and Alexander Ayriyan, Introduction to OpenCL and CUDA C for calculations on GPU at HybriLIT (tutorial - part 1)

Tuesday, September 10

09:00 – 09:30 Alexander Ayriyan, Interpolation formulas for the numerical solution on a sequence of grids for speed up the iterative process of solving the Poisson equation

09:30–10:00 Milena Veneva, Symbolic Algorithm for Solving SLAEs with Heptadiagonal Coefficient Matrices

10:00–10:30 *Coffee break*

10:30–11:00 Peter Rashkov, Numerical exploration of the host immune response to dengue virus

11:00 – 11:30 Milena Veneva, GPU Implementation of the Partition Method for Solving Tridiagonal SLAEs

11:30–12:00 Ivan Georgiev, Centre of Excellence in Informatics and Information and Communication Technologies

12:00 – 14:00 *Lunch*

14:00–14:30 Margarita Spiridonova, Operational Calculus Approach for Solving Boundary Value Problems for Some Partial Differential Equations.

14:30 – 15:00 *Coffee break*

15:30–17:00 Jan Busa and Alexander Ayriyan, Introduction to OpenCL and CUDA C for calculations on GPU at HybriLIT (tutorial - part 2)

19:00 *Dinner*

Wednesday, September 11

09:00 – 12:00 Open problem presentations and discussions

12:00 – 14:00 *Lunch*

14:00 – 16:00 Discussions in groups

16:00 – 16:30 *Wrap up and Closing*

The event will take place at the Neptune Hall in the Palace Hotel