

Stanislav Y. Polishchuk

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Mathematical Sciences
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Education

Ph.D. in Mathematical Sciences, Monash University, 2017-current.

M.S. in Applied Mathematics and Computer Science, Novosibirsk State Technical University, 2015-2017.

B.S. in Applied Mathematics and Computer Science, Novosibirsk State Technical University, 2011-2015.

Research Experience

Postgraduate Research Assistant. Monash University, Melbourne, Australia, 06.11.2017-present.

Developing and implementing new computational methods based on multi-level and multi-index Markov chain Monte Carlo methods for inverse problems.

Graduate Research Assistant. Trofimuk Institute of Petroleum-Gas Geology and Geophysics of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia, 14.03.2016-30.06.2017.

Developed and implemented new computational schemes for 3D gas-hydrate problems including design of the effective models.

Graduate Research Assistant. Novosibirsk State Technical University, Novosibirsk, Russia, 29.09.2015-26.12.2016.

Developed, realised and verified a multilevel solver for the 3D parabolic problem in heterogeneous media in the programming language C++.

Undergraduate Research Assistant. Novosibirsk State Technical University, Novosibirsk, Russia, 29.12.2014-24.01.2015.

Developed, realised and verified a numerical scheme based on discontinuous Galerkin methods for the 3D elliptic problem in heterogeneous media in the programming language C++.

Undergraduate Research Assistant. Institute of Computational Mathematics and Mathematical Geophysics of the Siberian Branch of the Russian Academy of Sciences, Novosibirsk, Russia, 07.2012.

Worked on high-performance computers. Studied functional algorithms and organization of interactions in parallel computers. Developed an in-game chat between clients on Android and PC.

Publications

Journal Articles

Polishchuk S.Y., Numerical homogenization on the basis of multiscale discontinuous Galerkin methods to determine the effective thermal characteristics, *Siberian Electronic Mathematical Reports*. 2016. Submitted.

Proceedings

Computing of the Effective Coefficients via Multiscale Discontinuous Galerkin Method, *SIAM Conference on Computational Science and Engineering (CSE17)*, February 27 – March 3, 2017.

Numerical modeling of Stefan problems on the basis of multiscale discontinuous Galerkin methods, *Novosibirsk State Technical University Conference. Science. Technology. Innovation. 2016*, December 05-09, 2016.

Mathematical modeling of heat-transfer problems with phase transitions on the basis of multiscale discontinuous Galerkin methods, *XVII Russian Conference of Young Scientists on Mathematical Modeling and Information Technology, Institute of Computational Mathematics and Mathematical Geophysics Siberian Branch of the Russian Academy of Sciences. Novosibirsk. October 31 – November 03, 2016.*

Research and Computation of the Effective Thermal Characteristics, *8th International Youth Scientific Conference "Theory and Numerical Methods of Solution of Inverse and Ill-posed Problems", Institute of Computational Mathematics and Mathematical Geophysics Siberian Branch of the Russian Academy of Sciences. Novosibirsk. September 01-07, 2016. 153 pp.*

Mathematical Modeling of Processes with Phase Transitions via Multiscale Discontinuous Galerkin Method, *Proceedings of the 54th International Students Scientific Conference. Mathematics/ Novosibirsk State University. Novosibirsk, Russian Federation. 2016. 236 pp.*

Work in progress

Mathematical modeling of heat-transfer processes with phase transitions on the basis of multiscale discontinuous Galerkin method.

Awards and Scholarships

Research grant awarded by the Center of Science and Technology at the Novosibirsk State Technical University, 2016 - 2017.

Research Interests

Numerical analysis and scientific computing;

Multilevel solvers for systems of linear algebraic equations;

Multiscale and multiphysics modeling;

Finite element analysis;

Meshless methods;

Phase transition (nonlinear problems);

Inverse problems.

Invited talks at seminars and conferences

Gave talk "Numerical modeling of Stefan problems on the basis of multiscale discontinuous Galerkin methods", *Novosibirsk State Technical University Conference. Science. Technology. Innovation. 2016*, December 08, 2016.

Gave talk "Mathematical modeling of heat-transfer problem with phase transitions on the basis of multiscale discontinuous Galerkin methods", *XVII Russian Conference of Young Scientists on Mathematical Modeling and Information Technology, Institute of Computational Mathematics and Mathematical Geophysics Siberian Branch of the Russian Academy of Sciences. Novosibirsk. November 3, 2016.*

Conducted a seminar about software patterns of design at the Novosibirsk State Technical University, September 29, 2016.

Gave talk "Mathematical Modeling of Processes with Phase Transitions via Multiscale Discontinuous Galerkin Method", *8th International Youth Scientific Conference "Theory and Numerical Methods of Solution of Inverse and Ill-posed Problems", Institute of Computational Mathematics and Mathematical Geophysics Siberian Branch of the Russian Academy of Sciences. Novosibirsk. September 02, 2016.*

Gave talk "Numerical Modeling of Stefan Problem via Discontinuous Galerkin Method", *Competition of Grants at Novosibirsk State Technical University. April 19, 2016.*

Gave talk "Mathematical Modeling of Processes with Phase Transitions via Multiscale Discontinuous Galerkin Method", *Proceedings of the 54th International Students Scientific Conference. Mathematics/Novosibirsk State University. Novosibirsk, Russian Federation. April 18, 2016.*

Gave talk "Mathematical Modeling Heat-Transfer Process in heterogeneous media via Discontinuous Galerkin Method", *Day of Science of NSTU-2016, Novosibirsk State Technical University. March 24, 2016.*

Gave talk "Mathematical Modeling Heat-Transfer Process via Discontinuous Galerkin Method", *Day of Science of NSTU-2015, Novosibirsk State Technical University. April 30, 2015.*

Presented results of developed in-game chat between clients on Android and PC, *Institute of Computational Mathematics and Mathematical Geophysics Siberian Branch of the Russian Academy of Science. July 13, 2012.*

Workshops

MATRIX: On The Frontiers of High Dimensional Computation. 4 – 15 June 2018.

Memberships

Member, Society for Industrial and Applied Mathematics (SIAM), 2016 - current.

Member, Australian Research Council (ARC) Centre of Excellence for Mathematical and Statistical Frontiers (ACEMS), 2018 - current.

Member, Australian Mathematical Society, 2018 - current.

Member, Australia and New Zealand Industrial and Applied Mathematics, 2018 - current.