Stanislav Y. Polishchuk

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Education

Ph.D. candidate 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, 06.11.2017-05.11.2021.

> 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

Under review

S.Y. Polishchuk, Advanced multi-level and multi-index Monte Carlo methods for uncertainty quantification, PhD thesis, 2021, submitted.

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

Proceedings

Multi-Level and Multi-Index Monte Carlo Discontinuous Galerkin Methods for Uncertainty Quantification of Nonlinear Hyperbolic Problems, *SIAM Conference on Computational Science and Engineering (CSE19)*, February 25 – March 1, 2019.

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-possed 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

Multi-index Monte Carlo and homotopy methods for random non-self-adjoint eigenvalue problems.

Awards and Scholarships

Monash Graduate Scholarship, 2017 - 2021.

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

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 - 2021.

Member, Australian Mathematical Society, 2018 - current.

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

References

Professor Tiangang Cui (supervisor)
Monash University, Melbourne, Australia
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Professor Hans De Sterck (supervisor)
University of Waterloo, Waterloo, Canada
Email: hdesterck@gmail.com