Stanislav Y. Polishchuk

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Education

Ph.D. in Mathematics, Monash University, 2017–2022.

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

Research Officer (Casual, fixed term). Monash University, Melbourne, Australia, 21.02.2022 – 27.05.2022.

Investigated the homotopy method and its application to the multi-level Monte Carlo methods (C/C++).

Postgraduate Researcher. Monash University, Melbourne, Australia, 06.11.2017–05.11.2021.

Developed and implemented new computational methods based on multi-level and multi-index Monte Carlo methods (C/C++).

Studied optimization-based transport approaches for inverse problems, Heidelberg, Germany, October, 2019.

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, 29.09.2015–26.12.2015.

Developed, implemented 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, implemented and verified a numerical scheme based on discontinuous Galerkin methods for the 3D elliptic problem in heterogeneous media in 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

S.Y. Polishchuk, Advanced multi-level and multi-index Monte Carlo methods for uncertainty quantification, PhD thesis, 2022.

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.

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.