Minglei Yang

Contact Information

Postdoctoral Research Associate
Theory and Modeling Group, Fusion Energy Division
Oak Ridge National Laboratory
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Education

Ph.D. in applied mathematics (GPA 4.0/4.0) Jan. 2016 – Dec. 2019
Auburn University, Auburn, AL
Dissertation title: Probabilistic schemes for semi-linear nonlocal diffusion equations with application in predicting runaway electron dynamics.
Advisor: Dr. Yanzhao Cao and Dr. Guannan Zhang

B.S. in Mathematics (GPA 3.5/4.0) Aug. 2011 – Jun. 2015
Heilongjiang University, Harbin, China

Professional Experience

Postdoctoral Research Associate Jan. 2020 – Present
Theory and Modeling Group, Fusion Energy Division
Oak Ridge National Laboratory
Manager: David Lindsay Green

ASTRO Internship Researcher Jan. 2019 – Aug. 2019
Computer Science and Mathematics Division
Oak Ridge National Laboratory
Mentor: Prof. Guannan Zhang

Course Instructor Aug. 2017 – Dec. 2018
Department of Mathematics and Statistics
Auburn University, Auburn AL
(Courses: Pre-Calculus, Trig Function, Calculus I)

Graduate Teaching Assistant Jan. 2016 – May. 2017
Department of Mathematics and Statistics
Auburn University, Auburn AL
(Courses: Calculus II, Linear Algebra, Calculus III)

Research Interests

Numerical methods for PDEs and stochastic PDEs
Sparse grid methods for high-dimensional approximation
Particle transport in plasma physics

Publications & Pre-prints

M. Yang, G. Zhang, D. del-Castillo-Negrete, M. Stoyanov, M. Beidler, *A sparse-grid probabilistic scheme for approximation of the runaway probability of electrons in fusion tokamak simulation,* arXiv preprint arXiv:2001.05800.

M. Yang, G. Zhang, D. del-Castillo-Negrete, M. Stoyanov, *A Feynman-Kac based numerical method for the exit time probability of a class of transport problems.* Submitted to Journal of Computational Physics (2020).

M. Yang, G. Zhang, Y. Cao, *An efficient probabilistic scheme for semi-linear nonlocal diffusion equations in three-dimensional irregular domains*, preprint.

M. Yang, G. Zhang, D. del-Castillo-Negrete, *Free divergence magnetic field interpolation based on the global least-squares method*, preprint.

Talks at professional meetings

Technical Talk, *A probabilistic numerical scheme for escape probability*, Theory and Modeling Group, ORNL(online), Aug 5th. 2020.

SIAM SEAS 2019 Annual Meeting, *A probabilistic numerical scheme for the partial integro-differential equations in three-dimensional irregular domains*, University of Tennessee, Sep 21st. 2019.

Seminar of Applied Mathematics, *Analysis and numerical solutions for stochastic PDEs with applications in plasma physics*, Auburn University, May. 2019.

Computing Skills Proficient languages: Python, Matlab, Fortran90

Memberships Society for Industrial and Applied Mathematics (SIAM)

Honors and Awards Merit Student of Heilongjiang University,
Honorary Title of Outstanding Cadre of Heilongjiang University.