Zhichao Peng

CONTACT INFORMATION

Department of Mathematical Sciences
Rensselaer Polytechnic Institute
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EDUCATION

Department of Mathematical Sciences, Rensselaer Polytechnic Institute, Troy, NY, USA

Ph.D. Candidate, Applied Mathematics, 08/2015-08/2020 (expected)

- Advisor: Professor Fengyan Li

School of Mathematical Sciences, Peking University, Beijing, P.R.China

B.S. in Mathematics, 09/2011 - 07/2015

RESEARCH INTERESTS

- Finite element methods: discontinuous Galerkin (DG) method, discontinuous Petrov-Galerkin (DPG) method
- Structure preserving methods: asymptotic preserving, positivity preserving, energy stable
- Numerical methods for multi-scale kinetic transport models, Maxwell's equations in nonlinear media

RESEARCH EXPERIENCE

08/2015 –08/2020 Student research assisstant
Advisor: Professor Fengyan Li
Rensselaer Polytechnic Institute

05/2019 –08/2019 Student Intern
Advisor: Dr. Xianzhu Tang
Los Alamos National Laboratory

PUBLICATIONS

- Refereed journal papers:
  - Z. Peng, Q. Tang, X.-Z. Tang, *An adaptive discontinuous Petrov-Galerkin method for the Grad-Shafranov equation*, SIAM Journal on Scientific Computing (accepted)
  - Z. Peng, Y. Cheng, J.-M. Qiu, F. Li, *Stability-enhanced AP IMEX-LDG schemes for linear kinetic transport equations under a diffusive scaling*, Journal of Computational Physics, v415 (2020), pp.109485
  - Z. Peng, V. A. Bokil, Y. Cheng, F. Li, *Asymptotic and positivity preserving methods for Kerr-Debye model with Lorentz dispersion in one dimension*, Journal of Computational Physics, v402 (2020), pp.109101
- Submitted
  - Z. Peng and F. Li, Asymptotic preserving IMEX-DG-S schemes for linear kinetic transport equations based on Schur complement, submitted (2020)
  - Z. Peng, Y. Cheng, J.-M. Qiu, F. Li, Stability-enhanced AP IMEX1-LDG method: energy-based stability and rigorous AP property, submitted (2020)

Presentations

- Invited talks
  - RTG Seminar, Rensselaer Polytechnic Institute, Troy, NY, USA, 10/29/2019
  - Applied Math Days, Rensselaer Polytechnic Institute, Troy, NY, USA, 04/05/2019 - 04/06/2019
  - Seminar, School of Mathematical Sciences, Peking University, Beijing, China, 12/27/2018
  - Seminar, School of Mathematical Sciences, University of Science and Technology of China, Heifei, China, 12/25/2018
  - 2018 SIAM Annual Meeting, Oregon Convention Center, Portland, OR, USA, 07/09/2018 - 07/13/2018
  - The 3rd Annual Meeting of SIAM Central States Section, Colorado State University, Fort Collins, CO, USA, 09/29/2017 - 10/01/2017
- Poster presentation
  - The ICERM 2018 Topical Workshop: Computational Aspects of Time Dependent Electromagnetic Wave Problems in Complex Materials, ICERM, Providence, RI, USA, 07/25/2018 - 07/29/2018

Professional travel

- Model and Dimension Reduction in Uncertain and Dynamic Systems, ICERM, Providence, RI, USA 01/27/2020 - 05/01/2020
- Frontiers in Applied and Computational Mathematics, ICERM, Providence, RI, USA, 01/04/2017- 01/06/2017

Teaching Experience

Fall, 2019	Teaching Assistant, MATH 2400 - Introduction to Differential Equations, Rensselaer Polytechnic Institute
Fall, 2018	Teaching Assistant, MATH 4090 - Foundation of Analysis, Rensselaer Polytechnic Institute
Fall, 2017	Teaching Assistant, MATH 4200 - Mathematical Analysis I, Rensselaer Polytechnic Institute
Fall, 2017	Teaching Assistant, MATH 4090 - Foundation of Analysis, Rensselaer Polytechnic Institute
Summer, 2016	Mentoring, Undergraduate Research, Rensselaer Polytechnic Institute

Honors and Awards

2020	The Joaquin B. Diaz Prize, Rensselaer Polytechnic Institute
2018	Founders Award of Excellence, Rensselaer Polytechnic Institute

Professional service

Reviewers for *SIAM Journal on Scientific Computing*, *Journal of Applied Mathematics and Physics*

Relevant Skills

- C++, Python, C, Matlab, Fortran,
- TensorFlow, MPI, PETSC, MFEM, HYPRE, Latex, Git,
- English, Chinese