CURRICULUM VITAE

Jie Du

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Education

- *Ph.D. in Mathematics,* School of Mathematical Sciences, University of Science and Technology of China, Hefei, Anhui, P.R. China, September 2010 – June 2015.
  Advisor: Professor Chi-Wang Shu and Professor Mengping Zhang
- *B.S. in Mathematics,* School of Mathematics, HeFei University of Technology, Hefei, Anhui, P. R. China, September 2006 – July 2010.

Academic Experience

- **Assistant Professor**, Yau Mathematical Sciences Center, Tsinghua University, Beijing, P.R. China, September 2017– Present.
- **Postdoctoral Fellow**, Department of Mathematics, The Chinese University of Hong Kong, Sha Tin, Hong Kong SAR, August 2015 – August 2017.
  Advisor: Professor Eric T. Chung
- **joint Ph.D. student**, Division of Applied Mathematics, Brown University, Providence, RI, USA, August 2014 – May 2015.
  Advisor: Professor Chi-Wang Shu
- **Research Assistant**, Department of Civil Engineering, The University of Hong Kong, Pokfulam, Hong Kong SAR, July 2014 – August 2014.
- **Research Assistant**, Department of Civil Engineering, The University of Hong Kong, Pokfulam, Hong Kong SAR, July 2012 – January 2013.
- **Research Assistant**, Department of Civil Engineering, The University of Hong Kong, Pokfulam, Hong Kong SAR, July 2011 – January 2012.

Research Interests

- Numerical solutions for PDEs using:
  (1) Finite element discontinuous Galerkin (DG) methods,
  (2) Finite difference weighted essentially non-oscillatory (WENO) methods,
  (3) Correction procedure via reconstruction (CPR) methods.
- High order numerical methods on point clouds.
- Modeling and numerical simulations for traffic flow and intelligent transport problems.
- Computational fluid dynamics.

Teaching

- Instructor: *Discontinuous Galerkin Methods*, Tsinghua University, Spring 2018.
- Instructor: *Linear Algebra*, Tsinghua University, Fall 2017.
- Instructor: *Linear Algebra*, The Chinese University of Hong Kong, Summer 2016.
- Teaching Assistant: *Numerical Methods for Partial Differential Equations*, University of Science and Technology of China, Fall 2013.
- Teaching Assistant: *Calculus*, University of Science and Technology of China, Spring 2012.
- Teaching Assistant: *Computational Methods*, University of Science and Technology of China, Spring 2011.

Publications in Refereed Journals (Appeared or Accepted)

1. **J. Du**, S.C. Wong, C.-W. Shu, T. Xiong, M. Zhang and K. Choi, *Revisiting Jiang's dynamic continuum model for urban cities*, Transportation Research Part B, v56 (2013), pp.96-119.
2. Y.Z. Tao, Y.Q. Jiang, **J. Du**, S.C. Wong, P. Zhang, Y.H. Xia and K. Choi, *Dynamic system-optimal traffic assignment for a city using the continuum modeling approach*, Journal of Advanced Transportation, v48 (2014), pp.782-797.
3. **J. Du**, C.-W. Shu and M. Zhang, *A simple weighted essentially non-oscillatory limiter for the correction procedure via reconstruction (CPR) framework*, Applied Numerical Mathematics, v95 (2015), pp.173-198.
4. **J. Du**, S.C. Wong, C.-W. Shu and M. Zhang, *Reformulating the Hoogendoorn-Bovy predictive dynamic user-optimal model in continuum space with anisotropic condition*, Transportation Research Part B, v79 (2015), pp. 189-217.
5. **J. Du**, C.-W. Shu and M. Zhang, *A simple weighted essentially non-oscillatory limiter for the correction procedure via reconstruction (CPR) framework on unstructured meshes*, Applied Numerical Mathematics, v90 (2015), pp.146-167.
6. **J. Du** and C.-W. Shu, *A high order stable conservative method for solving hyperbolic conservation laws on arbitrarily distributed point clouds*, SIAM Journal on Scientific Computing, v38 (2016), pp. A3094-A3128.
7. E.T. Chung, **J. Du** and M.C. Yuen, *An adaptive SDG method for the Stokes system*, Journal of Scientific Computing, v70 (2017), pp. 766-792.
8. J.C. Long, W.Y. Szeto, **J. Du**, and R.C.P. Wong, *A dynamic taxi traffic assignment model: a two-level continuum transportation system approach*, Transportation Research Part B, v100 (2017), pp. 222-254.
9. E.T. Chung, **J. Du** and C.Y. Lam, *Discontinuous Galerkin methods with staggered hybridization for linear elastodynamics*, Computers & Mathematics with Applications, v74 (2017), pp. 1198-1214.

10. **J. Du**, C.-W. Shu, *Positivity-preserving high-order schemes for conservation laws on arbitrarily distributed point clouds with a simple WENO limiter*, International Journal of Numerical Analysis and Modeling, v15 (2018), pp. 1-25.

11. **J. Du**, E.T. Chung, *An adaptive staggered discontinuous Galerkin method for the steady state convection-diffusion equation*, Journal of Scientific Computing, to appear.

12. **J. Du**, E.T. Chung, Ming Fai Lam and Xiao-Ping Wang, *Discontinuous Galerkin method with staggered hybridization for a class of nonlinear Stokes equations*, Journal of Scientific Computing, to appear.

Preprints

13. **J. Du**, Yang Yang and E.T. Chung, *Stability analysis and error estimates of local discontinuous Galerkin methods for convection-diffusion equations on overlapping meshes*, submitted to ESAIM: Mathematical Modelling and Numerical Analysis.

14. **J. Du** and Yang Yang, *Maximum-principle-preserving third order LDG method for convection-diffusion equations on overlapping meshes*, submitted to Journal of Computational Physics.

Awards

- The Dean's Excellence Award of Chinese Academy of Sciences, 2015, University of Science and Technology of China.
- Qiu Shi Graduate Student Scholarship, 2014, University of Science and Technology of China.
- Outstanding Graduates Award, 2010, HeFei University of Technology.
- Outstanding Thesis Award, 2010, HeFei University of Technology.
- National Scholarship, 2008 & 2009, HeFei University of Technology.
- Provincial-Level Merit Student, 2008, HeFei University of Technology.

Academic Activities

- Talk
  - International Conference on Applied Mathematics 2016, Liu Bie Ju Centre for mathematical Sciences, City University of Hong Kong, Hong Kong, May 30-June 2, 2016.
    Presentation: *An adaptive SDG method for the Stokes system.*
  - Yau Mathematical Sciences Center, Tsinghua University, Beijing, China, Mar. 31, 2017.
    Presentation: *High-order schemes for conservation laws with a simple weighted essentially non-oscillatory (WENO) limiter.*

- The Hong Kong Mathematical Society Annual General Meeting 2017, Hong Kong University of Science and Technology, Hong Kong, May 20, 2017.
  Presentation: *A high order method for solving conservation laws on arbitrarily distributed point clouds (invited talk).*
- School of Mathematical Sciences, University of Science and Technology of China, Hefei, China, Jun. 8, 2017.
  Presentation: *A high order method for solving conservation laws on arbitrarily distributed point clouds.*
- Computational & Applied Mathematics Seminar, Tsinghua University, Beijing, Oct. 10, 2017.
  Presentation: *Staggered Discontinuous Galerkin Methods for Stokes problem and elastodynamics.*
- College of Transportation Engineering, Tongji University, Shanghai, China, Jan. 07, 2018.
  Presentation: *Predictive continuum dynamic user-optimal models for urban cities.*

- Poster
  - Advanced Numerical Methods in the Mathematical Sciences, Institute for Scientific Computation, Texas A&M University, College Station, TX, USA, May 4-8, 2015.
    Poster: *A simple weighted essentially non-oscillatory (WENO) limiter for the correction procedure via reconstruction (CPR) framework on unstructured meshes.*
  - The Third International Workshop on Development and Application of High-Order Numerical Methods: in honor of Professor Chi-Wang Shu on his 60th birthday, School of Mathematical Sciences, University of Science and Technology of China, Hefei, Anhui, China, Dec. 17-19, 2016.
    Poster: *A high order stable conservative method for solving hyperbolic conservation laws on arbitrarily distributed point clouds.*

- Participant
  - The Summer Workshop on Numerical Methods of Multi-Media Hydrodynamics, Beijing Institute of Applied Physics and Computational Mathematics, Beijing, China, June 6-12, 2011.
  - Computational Seismology Workshop, Tsinghua Sanya International Mathematics Forum, Sanya, Hainan, China, January 4-8, 2016.
  - The 5th CAM-ICCM Workshop: Multiscale and Large-scale Scientific Computing, Department of Mathematics, The Chinese University of Hong Kong, Hong Kong, June 18-20, 2016.

Referee for Journals

- Journal of Computational Physics
- Journal of Scientific Computing

- Journal of Computational and Applied Mathematics
- International Journal of Sustainable Transportation
- Transportmetrica B: Transport Dynamics

Services

- Service to YMSC, Tsinghua University: Hiring committee, 2017.
- The 6th ICCM CAM Conference on Geometry and Imaging, Organizing Committee, 2017.

Computer Skills

- Programming languages: Fortran, Matlab, C.
- Experience in high performance scientific computing and in parallel computing using MPI.
- Software: working knowledge of standard business and mathematical software, including Matlab, Mathematica, Tecplot, LaTeX, etc.