Curriculum Vitae

Yong Liu

LSEC, Institute of Computational Mathematics
Hua Loo-Keng Center for Mathematical Sciences
Academy of Mathematics and Systems Science
Chinese Academy of Sciences
Beijing 100190, P.R. China

Email: yongliu@lsec.cc.ac.cn
URL: `https://yongliu12.github.io/yongliu.github.io`

Education

- **Ph.D. in Mathematics**, 09/2016 – 06/2020
  Department of Computational and Applied Mathematics, School of Mathematical Sciences,
  University of Science and Technology of China, Hefei, Anhui 230026, P.R. China
  Advisors: Professor Chi-Wang Shu & Professor Mengping Zhang
- **B.S. in Mathematics**, 09/2011 – 07/2015
  Department of Computational and Applied Mathematics, School of Mathematical Sciences,
  University of Science and Technology of China, Hefei, Anhui 230026, P.R. China

Professional Experience

- **Postdoc**, 07/2020 – present
  LSEC, Institute of Computational Mathematics,
  Hua Loo-Keng Center for Mathematical Sciences,
  Academy of Mathematics and Systems Science Chinese Academy of Sciences,
  Beijing 100190, P.R. China
  Mentor: Professor Zhiming Chen
- **Visiting Student**, 09/2018 – 06/2020
  Division of Applied Mathematics, Brown University, Providence, RI 02912, USA
  Advisor: Professor Chi-Wang Shu

Research Interests

- Discontinuous Galerkin (DG) finite element methods
- Superconvergence of DG methods
- Application of DG methods in magnetohydrodynamic
- Reduced basis method for stochastic partial differential equations

Publications/Preprints

- Journal Publications

  1. **Yong Liu**, Chi-Wang Shu and Mengping Zhang, *Entropy stable high order discontinuous Galerkin methods for ideal compressible MHD on structured meshes*, Journal of Computational Physics, v354 (2018), pp.163-178.

2. **Yong Liu**, Chi-Wang Shu and Mengping Zhang, *Optimal error estimates of the semidiscrete central discontinuous Galerkin methods for linear hyperbolic equations*, SIAM Journal on Numerical Analysis, v56 (2018), pp.520-541.
3. **Yong Liu**, Chi-Wang Shu and Mengping Zhang, *Superconvergence of energy-conserving discontinuous Galerkin methods for linear hyperbolic equations*, Communications on Applied Mathematics and Computation, v1 (2019), pp.101-116.
4. **Yong Liu**, Qingyuan Liu, Yuan Liu, Chi-Wang Shu and Mengping Zhang, *Locally divergence-free spectral-DG methods for ideal magnetohydrodynamic equations on cylindrical coordinates*, Communications in Computational Physics, v26 (2019), pp.631-653.
5. **Yong Liu**, Tianheng Chen, Yanlai Chen and Chi-Wang Shu, *Certified offline-free reduced basis (COFRB) methods for stochastic differential equations driven by arbitrary types of noise*, Journal of Scientific Computing, v81 (2019), pp.1210-1239.
6. **Yong Liu**, Chi-Wang Shu, and Mengping Zhang, *Optimal error estimates of the semidiscrete discontinuous Galerkin methods for two dimensional hyperbolic equations on Cartesian meshes using P^k elements*, ESAIM: Mathematical Modelling and Numerical Analysis (M^2AN), v54 (2020), pp.705-726.
7. Mengjiao Jiao, Yingda Cheng, **Yong Liu** and Mengping Zhang, *Central discontinuous Galerkin methods for the generalized Korteweg-de Vries equation*, Communications in Computational Physics, v28 (2020), pp.927–966.
8. Anqi Chen, Yingda Cheng, **Yong Liu** and Mengping Zhang, *Superconvergence of ultra-weak discontinuous Galerkin methods for the linear Schrödinger equation in one dimension*, Journal of Scientific Computing, v82 (2020), article number 22.
9. **Yong Liu**, Chi-Wang shu and Mengping Zhang, *Sub-optimal convergence of discontinuous Galerkin methods with central fluxes for linear hyperbolic equations with even degree polynomial approximations*, Journal of Computational Mathematics, to appear.
10. **Yong Liu**, Qi Tao and Chi-Wang Shu, *Analysis of optimal superconvergence of an ultraweak-local discontinuous Galerkin method for time dependent fourth-order equation*, ESAIM: Mathematical Modelling and Numerical Analysis (M^2AN), v54 (2020), pp.1797–1820.
11. **Yong Liu**, Jianfang Lu, Chi-Wang Shu and Mengping Zhang, *Central discontinuous Galerkin methods on overlapping meshes for wave equations*, ESAIM: Mathematical Modelling and Numerical Analysis (M^2AN), v55 (2021), pp.329–356.
12. Jianfang Lu, **Yong Liu** and Chi-Wang Shu, *An oscillation-free discontinuous Galerkin method for scalar hyperbolic conservation laws*, SIAM Journal on Numerical Analysis, to appear.

- Preprints

1. **Yong Liu**, Jianfang Lu and Chi-Wang Shu, *An oscillation-free discontinuous Galerkin method for hyperbolic systems*, submitted to SIAM Journal on Scientific Computing.
2. Juntao Huang, **Yong Liu**, Yuan Liu, Zhanjing Tao and Yingda Cheng, *A class of adaptive multiresolution ultra-weak discontinuous Galerkin methods for some nonlinear dispersive wave equations*, submitted to SIAM Journal on Scientific Computing.

Awards and Honors

- Outstanding Freshman Scholarship for Graduate Students, 2016, USTC.
- Chiang Chen Scholarship, 2016, USTC.
- Chiang Chen Scholarship, 2017, USTC.
- National Scholarship for Graduate Students, 2018, USTC.
- Huawei Scholarship, 2019, USTC.
- Special award of President award of Chinese Academy of Sciences, 2020, USTC.

Conferences/Workshops

- Invited and Contributed Talks
  - The eighteen-th annual meeting of China Society for Industrial and Applied Mathematics, Changsha, Hunan, China (Oct. 2020)
- Participant
  - The Third International Workshop on Development and Application of High-order Numerical Methods: in honor of Professor Chi-Wang Shu on his 60th birthday, University of Science and Technology of China, Hefei, Anhui, China (Dec. 2016)
  - The Fourth International Workshop on the Development and Application of High-order Numerical Methods, Nanjing University, Nanjing, Jiangsu, China (May 2018)
  - Celebrating 75 Years of Mathematics of Computation, ICERM, Providence, RI, USA (Nov. 2018)
  - Model and dimension reduction in uncertain and dynamic systems, ICERM, Providence, RI, USA (Jan.–May 2020)

Teaching Experience

- Teaching Assistant: *Computational Methods*, USTC, Spring 2016
- Teaching Assistant: *Real Analysis*, USTC, Spring 2015
- Teaching Assistant: *Functional Analysis*, USTC, Fall 2014

Referee for Journals

- Journal of Computational Physics
- Journal of Scientific Computing
- ESAIM: Mathematical Modeling and Numerical Analysis
- SCIENCE CHINA Mathematics

Computer skills

- Programming: Fortran, Mathematica, Matlab, C++
- Experience in high performance scientific computing and in parallel computing using MPI
- Software: Mathematica, Matlab, LaTex, Tecplot, etc.