

♪ 简历最近更新时间为2025年9月15日



张仪

工作地址

花江慧谷四号楼-408A
数学与计算科学学院
桂林电子科技大学
桂林, 中国

住址

花江校区
桂林电子科技大学
桂林, 中国

↔ **联系方式**

个人主页: www.mathischeap.com
邮箱: zhangyi_aero@hotmail.com
手机号码: +86 199 7417 1867

↔ **研究方向&技能**

计算数学, 计算力学, mimetic spectral element method, 有限元方法, 数值分析, 计算流体力学, 并行计算, 保结构离散技术等。

↔ **经历**

教师

2023.11 - 至今

*Discrete geometries of mathematics and physics (DGMP)*课题组
信息与计算科学系
数学与计算科学学院
桂林电子科技大学, 桂林, 中国

博士后

2022.11 - 2023.11

Robotics and Mechatronics
Faculty of Electrical Engineering, Mathematics & Computer Science
University of Twente(屯特大学), Enschede, the Netherlands

博士后

2022.02 - 2022.11

计算力学组
航空航天学院
中山大学, 深圳, 中国

↪ 教育

博士

2016.09 - 2022.01 (含一学术间隔年gap year)

Aerodynamics

Delft University of Technology(代尔夫特理工大学), Delft, the Netherlands

Mimetic Spectral Element Method and Extensions toward Higher Computational Efficiency

硕士

2013.09 - 2016.02

Aerodynamics

Delft University of Technology(代尔夫特理工大学), Delft, the Netherlands

Spatially mass-, kinetic energy- and helicity-preserving mimetic discretization of 3D incompressible Euler flows

本科

2009.09 - 2013.06

飞行器环境与生命保障工程

南京航空航天大学, 南京, 中国

↪ 出版物 (英文)

- Yi Zhang, Marc Gerritsma, Bridge the mimetic spectral element method to simplicial meshes, part I: triangular meshes, under review.
- S.D.M. de Jong, Andrea Brugnoli, Ramy Rashad, Yi Zhang, Stefano Stramigioli, A domain decomposition strategy for natural imposition of mixed boundary conditions in port-Hamiltonian systems, arXiv:2501.06107.
- Xuan Luo, Zichao Jiang, Yi Zhang, Qinghe Yao, Zhuolin Wang, Gengchao Yang, Bohua Huang, A CNN-based particle tracking method for large-scale fluid simulations with Lagrangian-Eulerian approaches, arXiv:2412.18379.
- Yi Zhang, Artur Palha, Andrea Brugnoli, Deepesh Toshniwal, Marc Gerritsma, Decoupled structure-preserving discretization of incompressible MHD equations with general boundary conditions, arXiv:2410.23973.
- Andrea Brugnoli, Ramy Rashad, Yi Zhang, Stefano Stramigioli, Finite element hybridization of port-Hamiltonian systems, Appl. Math. Comput. 498 (2025) 129377.
- Zhuolin Wang, Zichao Jiang, Yi Zhang, Gengchao Yang, Trevor Hocksun Kwan, Yuhui Chen, Qinghe Yao, A moving least square immersed boundary method for SPH with thin-walled structures, Comp. Part. Mech. 11 (2024) 1981–1995, <https://doi.org/10.1007/s40571-024-00721-2>.
- Yi Zhang, Artur Palha, Marc Gerritsma, Qinghe Yao, A MEEVC discretization for two-dimensional incompressible Navier-Stokes equations with general boundary conditions, Journal of Computational Physics 510 (2024) 113080. <https://doi.org/10.1016/j.jcp.2024.113080>.
- Zhuolin Wang, Zichao Jiang, Yi Zhang, Gengchao Yang, Trevor Hocksun Kwan, Yuhui Chen, Qinghe Yao, A moving least square immersed boundary method for SPH with thin-walled structures, Comp. Part. Mech. 11 (2024) 1981–1995.
- Zichao Jiang, Zhuolin Wang, Qinghe Yao, Gengchao Yang, Yi Zhang, Junyang Jiang, A neural network-based Poisson solver for fluid simulation, Neural Process Letters 56 (2024) 233.
- Qinghe Yao, Zhuolin Wang, Yi Zhang, Zijie Li, Junyang Jiang, Towards real-time fluid dynamics simulation: A data-driven NN-MPS method and its implementation, Mathematical and Computer Modelling of Dynamical Systems 29 (2023) 95–115.

- Y. Zhang, A. Palha, M. Gerritsma and L. G. Rebholz, A mass-, kinetic energy- and helicity-conserving mimetic dual-field discretization for three-dimensional incompressible Navier-Stokes equations, part I: Periodic domains, *Journal of Computational Physics* 451 (2022) 110868, doi.org/10.1016/j.jcp.2021.110868.
- Y. Zhang, J. Fisser and M. Gerritsma, A hybrid mimetic spectral element method for three-dimensional linear elasticity problems, *Journal of Computational Physics*, 433 (2021) 110179, doi.org/10.1016/j.jcp.2021.110179.
- V. Jain, Y. Zhang, A. Palha and M. Gerritsma, Construction and application of algebraic dual polynomial representations for finite element methods on quadrilateral and hexahedral meshes, *Computers & Mathematics with Applications*, 95 (2021) 101-142, doi.org/10.1016/j.camwa.2020.09.022.
- Y. Zhang, V. Jain, A. Palha, M. Gerritsma, The Use of Dual B-Spline Representations for the Double de Rham Complex of Discrete Differential Forms, *Lecture Notes in Computational Science and Engineering* 133 (2021) 227-242, doi.org/10.1007/978-3-030-49836-8_11
- Y. Zhang, V. Jain, A. Palha, M. Gerritsma, Discrete Equivalence of Adjoint Neumann–Dirichlet div-grad and grad-div Equations in Curvilinear 3D Domains, *Lecture Notes in Computational Science and Engineering* 134 (2020) 203-213, doi.org/10.1007/978-3-030-39647-3_15
- M. Gerritsma, V. Jain, Y. Zhang, A. Palha, Algebraic Dual Polynomials for the Equivalence of Curl-Curl Problems, *Lecture Notes in Computational Science and Engineering* 132 (2020), doi.org/10.1007/978-3-030-30705-9_27.
- Y. Zhang, V. Jain, A. Palha, M. Gerritsma, The Discrete Steklov–Poincaré Operator Using Algebraic Dual Polynomials, *Computational Methods in Applied Mathematics* 19(3) (2019) 645-661,
- Y. Zhang, V. Jain, A. Palha, M. Gerritsma, A high order hybrid mimetic discretization on curvilinear quadrilateral meshes for complex geometries, In proceedings of 6th European Conference on Computational Mechanics & 7th European Conference on Computational Fluid Dynamics (2019) 426-437.
- M. Gerritsma, A. Palha, V. Jain, Y. Zhang, Mimetic Spectral Element Method for Anisotropic Diffusion, *Numerical Methods for PDEs. SEMA SIMAI Springer Series* 15 (2018) 31-74,

↔ 出版物 (中文)

- 向鹏宇, 张仪, 蒋子超, 姚清河, 一种不可压缩理想磁流体的解耦保结构算法, *力学学报* 57(6) (2025) 1372-1381, 10.6052/0459-1879-24-548.
- 黄泊桦, 蒋子超, 王卓霖, 罗炫, 张仪, 姚清河, 杨耿超, 基于直接数值模拟的涡环碰撞过程涡结构分析, *力学学报* 56(7) (2024) 1-11, 10.6052/0459-1879-24-006.
- 王卓霖, 江俊扬, 杨耿超, 姚清河, 蒋子超, 张仪, 面向边缘计算的神经网络MPS加速算法, *中山大学学报 (自然科学版)* 62(5) (2023) 67-77, 10.13471/j.cnki.acta.snus.2022A064.
- 张栏, 蒋子超, 陈玉惠, 张仪, 杨耿超, 姚清河, 具有间断解的PTT型黏弹性流体热对流数值模拟, *中山大学学报 (自然科学版)* 62(5), (2023) 136-144, 10.13471/j.cnki.acta.snus.2023D008

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