Zhongjian Wang

212, Department of Mathematics,
RRS Building, HKU, Hong Kong
✆ *+852-59896813*
✉ *aris1992@outlook.com*

Education

2016–now **Ph.D. Candidate**, *Department of Mathematics, the University of Hong Kong*, Hong Kong.
Supervisor: Dr. Zhang Zhiwen, Expected Date of Graduation: 08/2020

2012–2016 **Bachelor of Science**, *Department of Mathematical Sciences, Tsinghua University*, Beijing.

Visiting Experiences

2018.11-19.1 **Visiting Ph.D. Student**, *Tsinghua University*, Beijing.
Supervised by Professor Steven Shing Tung Yau

2018.4-5 **Visiting Ph.D. Student**, *California Institute of Technology*, Pasadena.
Supervised by Professor Thomas Hou

2016.1-6 **Exchange Student**, *Ecole Normale Superieure*, Paris.
For Bachelor Thesis, supervised by Professor Espen Robstad Jakobsen

2013.7 **Visitor**, *University of Oxford*, Oxford.
Tsinghua University Distinguished Newcomer Student Leadership Program

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Awards and Scholarships

2019 **Doris Chen Postgraduate Travel Grant**, *Department of Mathematics, HKU.*

2019 **Student Travel Award for CSE19**, *Society for Industrial and Applied Mathematics.*

2018 **Pilot Scheme on International Experience**, *Faculty of Science, HKU.*

2017 **IPAM Student Travel Support**, *Institute for Pure & Applied Mathematics, UCLA.*

2016 **Hong Kong Ph.D. Fellowship**, *Research Grants Council.*

2013 **Scholarship for Academic Excellence**, *Tsinghua University.*

2012 **Gold Metalist**, *China Mathematics Olympiad*, Chinese Mathematical Society CMO Committe.

Research Interests

Uncertainty quantification, structure preserving methods and analysis of numerical methods for SDEs and SPDEs, including but not limited to:

I **multiscale problems:** calculation of effective diffusivites in periodic, random flows; convection enhanced diffusion pheonomenon.

II **applied problems:** non-linear filtering, neural network.

Publications and Preprints

1 A class of robust numerical methods for solving dynamical systems with multiple time scales *(submitted to IMA J NA, with T. Hou, Zhang, Z.)*

2   A robust stochastic structure-preserving Lagrangian scheme in computing effective diffusivity of 3D time-dependent flows *(submitted to SISC, with Xin, J., Zhang, Z.)*

3   Convergence of stochastic structure-preserving schemes for computing effective diffusivity in random flows *(submitted to SINUM, with Lyu, J., Xin, J., Zhang, Z..)*

4   Tensor train method for high-dimensional nonlinear filtering problems *(submitted to SICON, with Li, S., Yau, S. S. T., Zhang, Z.)*

5   Sharp uniform in time error estimate on a stochastic structure-preserving Lagrangian method and computation of effective diffusivity in 3D chaotic flows *(submitted to MMS, with Xin, J., Zhang, Z.)*

6   A new meshfree method for PDE with discontinuous coeffcients using the deep learning approach *(submitted to JCP, with Zhang, Z.)*

7   Wang, Z. Luo, X., Yau, S. S. T., Zhang, Z. Proper orthogonal decomposition method to nonlinear filtering problems in medium-high dimension, IEEE Transactions on Automatic Control, doi:10.1109/TAC.2019.2927322.

8   Wang, Z., Xin, J., & Zhang, Z. Computing Effective Diffusivity of Chaotic and Stochastic Flows Using Structure-Preserving Schemes. SIAM Journal on Numerical Analysis, 56(4), 2322-2344.

Teaching Experiences

Certificate   I was awarded the Certificate of Teaching and Learning in Higher Education from HKU Center of the Enhancement of Teaching and Learning in 2016.

18/19 Spring   Tutor of MATH4602 Scientific computing.

18/19 Fall   Tutor of MATH3601 Numerical analysis.

17/18 Spring   Tutor of MATH2014 Multivariable calculus and linear algebra.

17/18 Fall   Tutor of MATH1009 Basic mathematics for business and economics.

Conferences

2019.7   **Poster**, *International Congress on Industrial and Applied Mathematics (ICIAM 2019)*, Valencia.

2019.6   **Speaker**, *The 8th International Congress of Chinese Mathematicians (ICCM 2019)*, Beijing.

2019.2   **Poster**, *SIAM Conference on Computational Science and Engineering (CSE19)*, Spokane.

2018.11   **Poster**, *Big Data Challenges for Predictive Modeling of Complex Systems*, Hong Kong.

2018.7   **Poster**, *The 12th AIMS Conference on Dynamical Systems, Differential Equations and Applications*, Taibei.

2017.11   **Poster**, *IPAM Workshop IV of Complex High-Dimensional Energy Landscape*, Los Angeles.

Participant   (2019) ANMSC2019, Shenzhen. (2018) SIAM UQ18, Garden Grove. (2017) ICCP10, Macau. Tsinghua workshop on SPDE and UQ, Beijing. SIAM CSE17, Atlanta.