List of Publications:

- Published and Accepted

1. Li, S., Wang, Z., Yau, S. S. T., Zhang, Z.,Tensor train method for high-dimensional nonlinear filtering problems *(IEEE TAC, to appear)*
2. Wang, Z., Xin, J., Zhang, Z., DeepParticle: learning invariant measure by a deep neural network minimizing Wasserstein distance on data generated from an interacting particle method, Journal of Computational Physics (2022): 111309.
3. Wang, Z., Xin, J., Zhang, Z., Computing effective diffusivities in 3D time-dependent chaotic flows with a convergent Lagrangian numerical method, ESAIM: M2AN 56 (2022) 1521?1544
4. Lyu, J., Wang, Z., Xin, J., Zhang, Z., A convergent interacting particle method and computation of KPP front speeds in chaotic flows, SIAM Journal on Numerical Analysis, 2022, 60(3): 1136-1167
5. Wang, Z., Xin, J., Zhang, Z., Sharp uniform in time error estimate on a stochastic structure-preserving Lagrangian method and computation of effective diffusivity in 3D chaotic flows, Multiscale Model and Simulation, 19 (2021), no. 3, 1167?1189
6. Lyu, J., Wang, Z., Xin, J., Zhang, Z., Convergence of stochastic structure-preserving schemes for computing effective diffusivity in random flows, SIAM Journal on Numerical Analysis, 58 (2020), no. 5, 3040?3067. .
7. Wang, Z., Zhang, Z., A new mesh-free method for PDE with discontinuous coeffcients using the deep learning approach, Journal of Computational Physics (2020): 108963.
8. 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, 65 (2020), no. 4, 1613?1624.
9. 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.

- Preprints and Under-preparation

10. Wang, Z., Zhang W., Zhang Z., A data-driven model reduction method for parabolic inverse source problems and its convergence analysis *(arXiv:2110.07676)*
11. Wang, Z., T. Hou, Zhang, Z.A class of robust numerical methods for solving dynamical systems with multiple time scales *(arXiv:1909.04289)*
12. Bal, G., Hoskins, J.G., Wang Z., Transport in Dirac models for topological insulators *(arXiv:2206.08847)*
13. Wang, Z., Xin, J., Zhang Z.,A DeepParticle method for learning and generating aggregation patterns in multi-dimensional Keller-Segel chemotaxis systems *(arXiv:2209.00109)*
14. Cui, T., Wang, Z., Zhang, Z., A variational neural network approach for glacier modelling with nonlinear rheology *(arXiv:2209.02088)*
15. Chen, B., Bal, G., Wang, Z. One Dimensional Mixed Type Generalized Kimura Type Operator
16. Xie, Y., Wang, Z., Zhang, Z., Mini-batch interior point method for computing optimal transportation problems and its convergence analysis
17. Wang, Z., Zhang W., Zhang Z., Stochastic convergence of regularized solutions for backward heat conduction problems
18. Non-convergence tests for trajectory averages of ergodic Markov chains and diffusions

- Dissertations

19. Robust Lagrangian Numerical Schemes in Computing Effective Diffusivities for Chaotic and Random Flows, *Ph.D. Thesis, advisor: Prof. Zhiwen Zhang at HKU*
20. Convergence analysis of strong approximation to stochastic differential equation, *Bachelor Thesis, advisor: Prof. Espen Robstad Jakobsen at ENS*