

Zheng Ma

GOLOMB VISITING ASSISTANT PROFESSOR OF MATHEMATICS

150 N. University Street, West Lafayette, IN 47907-2067, USA

☎ (+1) 765-337-8766 | ✉ ma531@purdue.edu | 🏠 <https://www.math.purdue.edu/people/bio/ma531> | 📺 mayuyu

Publications

JOURNAL ARTICLES

- [1] **Phase Diagram for Two-layer ReLU Neural Networks at Infinite-width Limit**
T. LUO, Z.-Q. J. XU, Z. MA, Y. ZHANG
Journal of Machine Learning Research 22 (2021) pp. 1–47. 2021.
- [2] **A Linear Frequency Principle Model to Understand the Absence of Overfitting in Neural Networks**
Y. ZHANG, T. LUO, Z. MA, X. Z.-Q. JOHN
Chinese Physical Letters 38 (2021). 2021.
- [3] **Fourier-domain Variational Formulation and Its Well-posedness for Supervised Learning**
T. LUO, Z. MA, Z. WANG, Z.-Q. J. XU, Y. ZHANG
Preprint, 2020.
- [4] **On the exact computation of linear frequency principle dynamics and its generalization**
T. LUO, Z. MA, Z.-Q. J. XU, Y. ZHANG
Preprint, 2020.
- [5] **Frequency Principle: Fourier Analysis Sheds Light on Deep Neural Networks**
Z.-Q. J. XU, Y. ZHANG, T. LUO, Y. XIAO, Z. MA
Communications in Computational Physics (CiCP) 28.5 (2020) pp. 1746–1767. 2020.
- [6] **Uniformly accurate machine learning-based hydrodynamic models for kinetic equations**
J. HAN, C. MA, Z. MA, W. E
Proceedings of the National Academy of Sciences (PNAS) 116.44 (2019) pp. 21983–21991. 2019.
- [7] **A Fast Spectral Method for the Inelastic Boltzmann Collision Operator and Application to Heated Granular Gases**
J. HU, Z. MA
Journal of Computational Physics 385 (2019) pp. 119–134. 2019.
- [8] **Theory of the Frequency Principle for General Deep Neural Networks**
T. LUO, Z. MA, Z.-Q. J. XU, Y. ZHANG
Preprint, 2019.
- [9] **The Discrete Stochastic Galerkin Method for Hyperbolic Equations with Non-smooth and Random Coefficients**
S. JIN, Z. MA
Journal of Scientific Computing 74.1 (Jan. 2018) pp. 97–121. 2018.
- [10] **Uniform Spectral Convergence of the Stochastic Galerkin Method for the Linear Transport Equations with Random Inputs in Diffusive Regime and a Micro-Macro Decomposition-Based Asymptotic-Preserving Method**
S. JIN, J.-G. LIU, Z. MA
Research in the Mathematical Sciences 4.1 (Aug. 2017) p. 15. 2017.
- [11] **Explicit and Implicit TVD Schemes for Conservation Laws with Caputo Derivatives**
J.-G. LIU, Z. MA, Z. ZHOU
Journal of Scientific Computing 72.1 (July 2017) pp. 291–313. 2017.
- [12] **An Improved Semi-Lagrangian Time Splitting Spectral Method for the Semi-classical Schrödinger Equation with Vector Potentials Using NUFFT**
Z. MA, Y. ZHANG, Z. ZHOU
Applied Numerical Mathematics 111 (2017) pp. 144–159. 2017.

CONFERENCE PROCEEDINGS

- [1] **A type of generalization error induced by initialization in deep neural networks**
Y. ZHANG, Z.-Q. J. XU, T. LUO, Z. MA
Proceedings of The First Mathematical and Scientific Machine Learning Conference (MSML), 2020, Princeton University, Princeton, NJ, USA.
- [2] **Explicitizing an Implicit Bias of the Frequency Principle in Two-layer Neural Networks**
Z.-Q. J. XU, Y. ZHANG, T. LUO, Z. MA
Preprint, 2019.