Hanwen Zhang

CONTACT
INFORMATION

Department of Applied and
Computational Mathematics
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RESEARCH
INTERESTS

Numerical analysis, computational physics, PDE-constrained optimization

EMPLOYMENT

Gibbs Assistant Professor, Yale University	07/2022–
Graduate Research Assistant, Yale University	09/2017–05/2022
Optical Scientist, Facebook Reality Lab	06/2021–08/2021

EDUCATION

Ph.D. , Applied Physics, Yale University	09/2017–05/2022
B.Sc. , Physics, National University of Singapore	08/2012–05/2017
B.Eng. , Material Science, National University of Singapore	08/2012–05/2017

PUBLICATIONS

1. A. Gopal, **H Zhang**. "A highly accurate procedure for computing globally optimal Wannier functions in one-dimensional crystalline insulators." *Preprint (2024).*
2. **H. Zhang**, V. Rokhlin. "Finding roots of complex analytic functions via generalized colleague matrices." *Advances in Computational Mathematics (2024).*
3. W. Xue, **H. Zhang**, A. Gopal, V. Rokhlin, O. Miller. "Fullwave design of cm-scale cylindrical metasurfaces via fast direct solvers." *Preprint (2023).*
4. **H. Zhang**, Z. Kuang, S. Puri and O. Miller. "Conservation-law-based global bounds to quantum optimal control." *Physical Review Letters (2021).*
5. **H. Zhang**, O. Miller. "Quasinormal coupled mode theory." *Preprint (2020).*
6. **H. Zhang**, C.-W. Hsu, and O. Miller. "Scattering concentration bounds: brightness theorems for waves." *Optica (2019).*
7. Solutions manual to Quantum Mechanics by Julian Schwinger with Berthold-Georg Englert. (To appear.)

TALKS

- *An efficient scheme for fullwave inverse design of large-scale metasurfaces*, SPIE (2022)
- *Conservation-law-based global bounds to quantum optimal control*, SUTD Mathematics and Technology Seminar (2021)
- *Brightness theorems for nanophotonics*, CLEO (2019)

TEACHING

Yale University, Department of Mathematics
- Instructor – MATH 246 Ordinary Differential Equations, Fall 2024
- Instructor – MATH 222 Linear Algebra with Applications, Spring 2024
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- Instructor – MATH 222 Linear Algebra with Applications, Spring 2023
- Instructor – MATH 222 Linear Algebra with Applications, Fall 2022

Yale University, Department of Physics
- Teaching assistant – PHYS 502 Electromagnetic Theory I, Spring 2019