Zechuan Zhang

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EDUCATION

- **Doctorate in Pure Mathematics** Sept 2017 - June 2022
  School of Mathematical Sciences, Fudan University, Shanghai, China
  Advisor: Engui Fan
- **Bachelor's in Mathematics and Applied Mathematics** Sept 2013 - June 2017
  School of Mathematical Sciences, Inner Mongolia University, Hohhot, China

ACADEMIC EXPERIENCE

- **University at Buffalo, State University of New York, Department of Mathematics**
  Visiting Assistant Professor Aug 2022 - Jul 2024
- **SISSA, Mathematics Area**
  Postdoctoral Fellow Jul 2024 - Present

RESEARCH INTERESTS

- Nonlinear wave equations, solitons and integrable systems, inverse scattering transform, spectral theory of differential operators, long-time asymptotics, soliton gas.

PUBLICATIONS

Published/Accepted

1. Zechuan Zhang, Taiyang Xu and Engui Fan, "On the asymptotic stability of N-soliton solutions for the defocusing mKdV equation with finite density type initial data: without stationary phase points on jump contour", *Phys. D*, 472 (2025), Paper No. 134526, 18 pp.
2. Gino Biondini, Barbara Prinari and Zechuan Zhang, "Local and global well-posedness of the Maxwell-Bloch system of equations with inhomogeneous broadening", *Adv. Nonlinear Anal.*, 13 (2024), no. 1, Paper No. 20240054, 21 pp.
3. Taiyang Xu, Zechuan Zhang and Engui Fan, "On the Cauchy problem of defocusing mKdV equation with finite density initial data: long time asymptotics in solitonless regions", *J. Differential Equations*, 372, 55–122 (2023)
4. Zechuan Zhang and Engui Fan, "Inverse scattering transform and multiple high-order pole solutions for the Gerdjikov-Ivanov equation under the zero/nonzero background", *Z. Angew. Math. Phys.* 72, no. 4, Paper No. 153, 25 pp. (2021)
5. Zechuan Zhang and Engui Fan, "Inverse scattering transform for the Gerdjikov-Ivanov equation with nonzero boundary conditions", *Z. Angew. Math. Phys.* 71, no. 5, Paper No. 149, 28 pp. (2020)

Submitted

6. Gino Biondini and Zechuan Zhang, "Spectral theory for self-adjoint Dirac operators with periodic potentials and inverse scattering transform for the defocusing nonlinear Schrödinger equation with periodic boundary conditions", arXiv: 2311.18127 [math.AP], submitted to *Advances in Mathematics* (2024)

PRESENTATIONS

- 2023 AMS Fall Eastern Sectional Meeting, session on *Nonlinear Wave Equations and Integrable Systems* Sept 2023
- INI Satellite Programme *"Emergent Phenomena in Nonlinear DispersiveWaves"* Aug 2024
- 2024 International Conference on Water Waves and Bores Sept 2024

PROFESSIONAL SERVICE

- Journal reviewer:
  - Studies in Applied Mathematics May 2023
  - The European Physical Journal Plus May 2023
  - Zeitschrift für angewandte Mathematik und Physik Aug 2024
  - Nonlinearity Dec 2024
- Conferences:
  - 2024 Fall Southeastern Sectional Meeting, Savannah, GA: co-organizer Cancelled due to Helene hurricane Oct 2024

TEACHING

- **State University of New York at Buffalo, Department of Mathematics**
  - MTH 306, "Introduction to Differential Equations" Spring 2024
  - MTH 241, "Calculus III" Fall 2023
  - MTH 306, "Introduction to Differential Equations" Spring 2023
- **Fudan University, Department of Mathematics**
  - "Recitation of Calculus II" Spring 2018
  - "Recitation of Calculus I" Fall 2017