Yongming Luo

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Research Interests

- Long time dynamics of nonlinear dispersive equations
- Homogenization and dimension reduction problems arising in material science

Education

Ph.D. in Mathematics, Universität Kassel (2014-2019)

- Thesis title: Existence and Regularity Results of a Ferroelectric Phase-Field Model
- Advisor: Prof. Dr. Dorothee Knees

M.Sc. in Mathematics, Technische Universität München (2011-2014)

- Thesis title: Semicircle Law for a Class of Random Matrices with dependent Entries
- Advisor: Prof. Dr. Simone Warzel

B.Sc. in Mathematics, Technische Universität München (2008-2011)

- Thesis title: Numerik der skalaren Erhaltungsgleichungen
- Advisor: Prof. Dr. Oliver Junge

Positions

- *Senior Lecturer*, Shenzhen MSU-BIT University (2023.03-Present)
- *Postdoctoral Research Associate*, Technische Universität Dresden (2020.04-2023.01)

Publications and Preprints

Preprints

1. **A Legendre-Fenchel identity for the nonlinear Schrödinger equations on $\mathbb{R}^d \times \mathbb{T}^m$: theory and applications** . Submitted. (arxiv 2307.16153)

2. **On the focusing fractional nonlinear Schrödinger equation on the waveguide manifolds** (joint with A. Esfahani, H. Hajaiej and L. Song). Submitted. (arxiv 2305.19791)

3. **Almost sure scattering for the defocusing cubic nonlinear Schrödinger equation on $\mathbb{R}^3 \times \mathbb{T}$.** Submitted. (arxiv 2304.12914)

4. **Efficient uncertainty quantification for mechanical properties of randomly perturbed elastic rods** (joint with P. Dondl, S. Neukamm and S. Wolff-Vorbeck). Submitted. (arxiv 2304.08785)

5. **On well-posedness results for the cubic-quintic NLS on** $\mathbb{T}^3$ (joint with X. Yu, H. Yue and Z. Zhao). Submitted. (arxiv 2301.13433)

6. **On existence and stability results for normalized ground states of mass-subcritical biharmonic NLS on** $\mathbb{R}^d \times \mathbb{T}^n$ (joint with H. Hajaiej and L. Song). Submitted. (arxiv 2212.00750)

7. **Normalized ground states and threshold scattering for focusing NLS on** $\mathbb{R}^d \times \mathbb{T}$ **via semivirial-free geometry**. Submitted. (arxiv 2205.04969)

Publications

1. **Sharp scattering for focusing intercritical NLS on high-dimensional waveguide manifolds**. *Math. Ann.*, to appear. (arxiv 2212.10908)

2. **On long time behavior of the focusing energy-critical NLS on** $\mathbb{R}^d \times \mathbb{T}$ **via semivirial-vanishing geometry**. *J. Math. Pures Appl.* 177 (2023), 415-454. (arxiv 2206.07346)

3. **On sharp scattering threshold for the mass-energy double critical NLS via double track profile decomposition**. *Ann. Inst. H. Poincaré C Anal. Non Linéaire*, to appear. (arxiv 2108.00915)

4. **Sharp scattering threshold for the cubic-quintic NLS in the focusing-focusing regime**. *J. Funct. Anal.* 283 (2022), no. 1, Paper No. 109489, 34 pp.

5. **On the local in time well-posedness of an elliptic-parabolic ferroelectric phase-field model**. *Nonlinear Anal. Real World Appl.* 65 (2022), Paper No. 103462, 30 pp.

6. **On 3d dipolar Bose-Einstein condensates involving quantum fluctuations and three-body interactions** (joint with A. Stylianou). *Discrete Contin. Dyn. Syst. Ser. B* 26 (2021), no. 6, 3455-3477.

7. **Ground states for a nonlocal mixed order cubic-quartic Gross-Pitaevskii equation** (joint with A. Stylianou). *J. Math. Anal. Appl.* 496 (2021), no. 1, Paper No. 124802, 20 pp.