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

Employment

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

Publications and Preprints

Preprints

1. **Almost sure scattering for the defocusing cubic nonlinear Schrödinger equation on** $\mathbb{R}^3 \times \mathbb{T}$. Submitted. (arxiv 2304.12914)
2. **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)
3. **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)
4. **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)
5. **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.*, to appear. (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.

Permanent notes

1. **Large data global well-posedness and scattering for the focusing cubic nonlinear Schrödinger equation on $\mathbb{R}^2 \times \mathbb{T}$.** Permanent note. (arxiv 2202.10219)

2. **Normalized ground states for 3D dipolar Bose-Einstein condensate with attractive three-body interactions** (joint with A. Stylianou). Permanent note. (arxiv 2202.09801)

3. **Scattering threshold for radial defocusing-focusing mass-energy double critical nonlinear Schrödinger equation in $d \geq 5$.** Permanent note. (arxiv 2106.06993)

Presentations and Talks

1. *Almost sure scattering for the defocusing cubic nonlinear Schrödinger equation on $\mathbb{R}^3 \times \mathbb{T}$.* Beijing, IAPCM, May 2023.

2. *Almost sure scattering for the defocusing cubic nonlinear Schrödinger equation on $\mathbb{R}^3 \times \mathbb{T}$.* Beijing, AMSS, Chinese Academy of Sciences, May 2023.

3. *Almost sure scattering for the defocusing cubic nonlinear Schrödinger equation on $\mathbb{R}^3 \times \mathbb{T}$.* Beijing, Beijing Institute of Technology, May 2023.

4. *Efficient uncertainty quantification for mechanical properties of randomly perturbed elastic rods.* Aachen, 92nd GAMM Annual Meeting, Aug 2022.

5. *On long time behavior of focusing NLS on waveguide manifolds.* China (online), Webinar on Analysis and PDE (Online seminar organized by Prof. Zihua Guo from Monash University), Jun 2022.

6. *Homogenization and dimension reduction for a randomly perturbed thin rod model.* Kassel (online), SPP-1886 Kick-off meeting, Oct 2020.

7. *Existence and regularity results of a ferroelectric phase-field model.* Kassel, 9th Singular Day, Sep 2019.

8. *A 3D dipolar Bose-Einstein condensate with quantum fluctuation and three-body interaction.* Vienna, 90th GAMM Annual Meeting, Feb 2019.

9. *Existence results for a ferroelectric phase-filed model.* Eindhoven, poster presentation at GAMM-Workshop on Analysis of PDE, Sep 2017.

10. *A Survey on a two dimensional ferroelectric model.* Weimar, 88th GAMM Annual Meeting, Mar 2017.

Teaching Experience

- Discrete Structure I and II, exercise tutorial, Universität Kassel (WS14-SS18)
- Foundations of Computer Science, exercise tutorial, Universität Kassel (WS18, WS19)
- Analysis for students in Computer Science, exercise tutorial, Universität Kassel (SS19)
- Finite Element Method, exercise tutorial, Technische Universität Dresden (WS21)
- Analysis I, exercise tutorial, Technische Universität Dresden (WS22)