Yongming Luo

Faculty of Computational Mathematics and Cybernetics
Shenzhen MSU-BIT University
International University Park Road 1, Shenzhen, Guangdong, China

luo.yongming@smbu.edu.cn

Education

- **Ph.D. in Mathematics**, Universität Kassel (2014-2019)
  - 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)
- **B.Sc. in Mathematics**, Technische Universität München (2008-2011)

Academic Positions

- **Senior Lecturer**, Shenzhen MSU-BIT University (2023.03-Present)
- **Postdoctoral Fellow**, Technische Universität Dresden (2020.04-2023.01)
  - Mentor: Prof. Dr. Stefan Neukamm

Research Interests

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

Grants & Support

- NSF Grant of Guangdong (No. 2024A1515010497), 2024.01-2026.12.
- NSF Youth Grant of China (No. 12301301), 2024.01-2026.12.

Selected Talks

- *Long time behavior of the focusing NLS on $\mathbb{R}^d \times \mathbb{T}$ via the semivirial-vanishing geometry.* Workshop on Analysis and Computation (SMBU), Shenzhen, Nov 2023.
- *Sharp scattering for the mass-energy doubly critical NLS via the double track profile decomposition.* Symposium on Nonlinear Wave Equations and Related Problems (BIT-AMSS), Beijing, Nov 2023.
- *Long time behavior of the focusing NLS on $\mathbb{R}^d \times \mathbb{T}$ via the semivirial-vanishing geometry.* IMS Anniversary Symposium on PDEs (STU), Shanghai, Oct 2023.
- *Almost sure scattering for the defocusing cubic nonlinear Schrödinger equation on $\mathbb{R}^3 \times \mathbb{T}$.* Workshop on dispersive equations (IAPCM), Beijing, May 2023.
- *Efficient uncertainty quantification for mechanical properties of randomly perturbed elastic rods.* 92nd GAMM Annual Meeting, Aachen, Aug 2022.

- *Existence and regularity results of a ferroelectric phase-field model.* 9th Singular Day (U. Kassel), Kassel, Sept 2019.
- *A 3D dipolar Bose-Einstein condensate with quantum fluctuation and three-body interaction.* 90th GAMM Annual Meeting, Vienna, Feb 2019.
- *A survey on a two dimensional ferroelectric model.* 88th GAMM Annual Meeting, Weimar, Mar 2017.

Preprints & Articles

14. Y. Luo. *A Legendre-Fenchel identity for the nonlinear Schrödinger equations on $\mathbb{R}^d \times \mathbb{T}^m$: theory and applications.* Submitted. (arXiv: 2307.16153)
13. A. Esfahani, H. Hajaiej, Y. Luo and L. Song. *On the focusing fractional nonlinear Schrödinger equation on the waveguide manifolds.* Submitted. (arXiv: 2305.19791)
12. Y. Luo, X. Yu, H. Yue and Z. Zhao. *On well-posedness results for the cubic-quintic NLS on $\mathbb{T}^3$.* Submitted. (arXiv: 2301.13433)
11. Y. Luo. *Normalized ground states and threshold scattering for focusing NLS on $\mathbb{R}^d \times \mathbb{T}$ via semivirial-free geometry.* Submitted. (arXiv: 2205.04969)
10. Y. Luo. *Almost sure scattering for the defocusing cubic nonlinear Schrödinger equation on $\mathbb{R}^3 \times \mathbb{T}$.* **J. Funct. Anal.** 287 (2024), no. 4, Paper No. 110492, 33 pp.
9. P. Dondl, Y. Luo, S. Neukamm and S. Wolff-Vorbeck. *Efficient uncertainty quantification for mechanical properties of randomly perturbed elastic rods.* **Multiscale Model. Simul.**, to appear.
8. Y. Luo. *Sharp scattering for focusing intercritical NLS on high-dimensional waveguide manifolds.* **Math. Ann.** 389 (2024), no. 1, 63-83.
7. H. Hajaiej, Y. Luo and L. Song. *On existence and stability results for normalized ground states of mass-subcritical biharmonic NLS on $\mathbb{R}^d \times \mathbb{T}^n$.* **SIAM J. Math. Anal.** 56 (2024), no. 4, 4415-4439.
6. Y. Luo. *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.
5. Y. Luo. *On the sharp scattering threshold for the mass-energy double critical nonlinear Schrödinger equation via double track profile decomposition.* **Ann. Inst. H. Poincaré C Anal. Non Linéaire** 41 (2024), no. 1, 187-255.
4. Y. Luo. *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.
3. Y. Luo. *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.
2. Y. Luo and A. Stylianou. *On 3d dipolar Bose-Einstein condensates involving quantum fluctuations and three-body interactions.* **Discrete Contin. Dyn. Syst. Ser. B** 26 (2021), no. 6, 3455-3477.
1. Y. Luo and A. Stylianou. *Ground states for a nonlocal mixed order cubic-quartic Gross-Pitaevskii equation.* **J. Math. Anal. Appl.** 496 (2021), no. 1, Paper No. 124802, 20 pp.

Permanent notes

- Y. Luo. *Large data global well-posedness and scattering for the focusing cubic nonlinear Schrödinger equation on $\mathbb{R}^2 \times \mathbb{T}$.* (arXiv: 2202.10219)
- Y. Luo and A. Stylianou. *Normalized ground states for 3D dipolar Bose-Einstein condensate with attractive three-body interactions.* (arXiv: 2202.09801)
- Y. Luo. *Scattering threshold for radial defocusing-focusing mass-energy double critical nonlinear Schrödinger equation in $d \geq 5$.* (arXiv: 2106.06993)