Xue Quan (全雪)

School of Mathematical Sciences, Beijing Normal University
Birth: Jan. 1998 | Tel: (+86) 188-1039-9913 | Email: xquan@mail.bnu.edu.cn

EDUCATION

Sep. 2020 - Present: **Ph.D. candidate**, School of Mathematical Sciences, Beijing Normal University (with Huajie Chen)

Sep. 2016 - Jul. 2020: **Bachelor**, School of Mathematical Sciences, Beijing Normal University

EXPERIENCE

Dec. 2023 - Nov. 2024: **Visiting student**, Laboratoire de mathématiques d'Orsay, Université Paris-Saclay (with Antoine Levitt)

Jun. 2023 - Sep. 2023: **Visiting student**, Mathematics Department, Louisiana State University (with Daniel Massatt)

RESEARCH INTERESTES

- Mathematical modeling and analysis for low dimensional incommensurate materials
- Numerical methods for electronic structure calculations
- Software development for quantum chemistry and materials science

PUBLICATIONS

- X. Quan and H. Chen, A finite element configuration interaction method for Wigner localization, J. Comput. Phys., 489:112251, 2023.
- X. Quan, A. B. Watson, and D. Massatt, Construction and accuracy of electronic continuum models of incommensurate bilayer 2D materials, arXiv:2406.15712, 2024.
- X. Quan and H. Chen, Stochastic density functional theory in the lens of multilevel Monte Carlo method, in preparation.
- X. Quan, H. Chen, and D. Massatt, Planewave approximations for incommensurate systems with density functional models, in preparation.

PRIZES

- 2023: China National Scholarship (中国国家奖学金)
- 2020 - 2022: First Class Award Scholarship of the Graduate School

CONFERENCE TALKS

- Jun. 6, 2024, Laboratoire de Mathématiques de Besançon Seminar, Besançon, France
- Jan. 29, 2024, Extreme-scale Mathematically-based Computational Chemistry (EMC2) Seminar, Laboratoire Jacques-Louis-Lions, Paris, France
- Oct. 14, 2023, The 7th Student Forum, The 21st Annual Meeting of China Society for Industrial and Applied Mathematics (CSIAM 2023), Kunming, China
- Aug. 25, 2023, Minisymposium on Analysis, Methods and Applications in Complex Materials, The 10th International Congress on Industrial and Applied Mathematics (ICIAM 2023), Tokyo, Japan
- Aug. 3, 2023, Mathematics of Material Science Informal Seminar, Louisiana State University, Baton Rouge, USA

PROGRAMMING PACKAGES

- **DividedDifferences.jl** (https://github.com/xuequan818/DividedDifferences.jl)
  Robust calculation of matrix functions, and accurate calculation of divided differences.
- **MatrixFunctionDiff.jl** (https://github.com/xuequan818/MatrixFunctionDiff.jl)
  Higher order Fréchet derivatives of matrix functions.
- **GeneralizedBM.jl** (https://github.com/xuequan818/GeneralizedBM.jl)
  Simulation of twisted bilayer graphene using tight-binding model and continuum model.
- **SchrodingerFE.jl** (https://github.com/dussong/SchrodingerFE.jl)
  Resolution of the Schrödinger equation with finite elements.