Zikang Qin

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Education

Nanjing Normal University, B.S. in Computational Mathematics — Sept 2012 – July 2017
- GPA: 3.04/4.0

China Academy of Engineering Physics, M.S. in Computer Science — Sept 2018 – July 2021
- Dissertation title: *Study on efficient methods for solving time harmonic Maxwell equation in waveguide*
- GPA: 2.77/4.0

China Academy of Engineering Physics, Ph.D. in Computational Mathematics — Sept 2023 – July 2026
- Dissertation title: *Study on efficient methods for discrete linear systems of structural elements in static analysis*
- GPA: 3.40/4.0

Experience

Software Engineer, CETC 38th Research Institute – Hefei, Anhui Province — Aug 2021 – Aug 2022
- Integrated Kalman filter modules into the ReWorks embedded system platform for real-time radar track data processing

Software Engineer, Universaland – Hefei, Anhui Province — Oct 2022 – Aug 2023
- Developed an adaptive network adjustment module for a GNSS high-precision positioning software
- Improved positioning precision by 10%–15%

Research Projects

Efficient Methods for Solving Time-Harmonic Maxwell Equations in SiP Applications
- Designed a **multigrid** preconditioner based on shifted relative permittivity
- Developed an **MPI-based distributed parallel solver**, achieving favorable numerical performance
- Tools Used: C, MPICH, PETSc

Efficient Methods for Solving Structural Element Discrete Linear Systems in Static Analysis
- Developed a **parallel graph-partitioning multigrid coarsening module** using ParMETIS
- Constructed **multigrid interpolation operators** based on rigid body modes and Kirchhoff theory
- Designed an **MPI-based distributed parallel aggregation-based multigrid preconditioner**, significantly improving static structural simulation efficiency
- Tools Used: C, MPICH, ParMETIS, PETSc

Publications

CSCMO: Relative Permittivity-Based Complex Shifted Operator Preconditioning Method for Solving Time-Harmonic Maxwell Equations — Aug 2025

Zikang Qin, Xiaoyu Duan, Hengbin An, etc

Applied Numerical Mathematics (JCR Q1), Accept

Comparison of Two Methods for Accelerating Convergence of Vector Sequences — Dec 2021

Zikang Qin, Hengbin An, Xinyu Wang

Journal on Numerical Methods and Computer Applications, 10.12288/szjs.s2020-0704

Professional Skills

Programming: C, Python, MATLAB
Parallel Computing: MPI, PETSc, AMGX, Hypre, MUMPS
Languages: English (proficient), Chinese (native)

Honors & Awards

Chinese College Students Math Competition, Second Prize — Nov 2014
Chinese College Students Math Competition, Third Prize — Nov 2015
NNU Mathematical Contest in Modeling, First Prize — May 2015