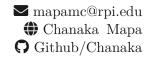
Chanaka D. Mapa

PhD in Applied Mathematics Rensselaer Polytechnic Institute, Troy, NY



OVERVIEW

I develop scalable algorithms for quantum many-body problems. My PhD focuses on coupled-cluster methods, efficient tensor operations, and convergence techniques for solving the electronic Schrödinger equation.

EDUCATION

Rensselaer Polytechnic Institute

PhD in Applied Mathematics

Advisor: Prof. Fabian M. Faulstich

Rensselaer Polytechnic Institute

 MS in Applied Mathematics

Advisor: Prof. Yangyang Xu

University of Peradeniya

BS in Mathematics

Advisor: Prof. Athula A.I. Perera

Troy, NY, USA

2023 - 2028 (expected)

Troy, NY, USA

2025

Peradeniya, Sri Lanka

2022

Professional Experience

Rensselaer Polytechnic Institute - Troy, NY

2023 - Present

Research assistant under Prof. Fabian M. Faulstich:

- Coupled-cluster doubles implementation in Julia.
- Linear scaling coupled cluster and perturbation theories in the atomic orbital basis.

Rensselaer Polytechnic Institute - Troy, NY

2023 - 2024

Teaching assistant for the following courses:

- MATH 1020: Calculus II
- MATH 2010: Multivariable Calculus and Matrix Algebra
- MATH 6800: Computational Linear Algebra (Graduate level)

Bank of Ceylon (BOC) - Minuwangoda, Sri Lanka

2017 - 2018

Trainee, Job Skills Development Program for School Leavers

 Gained practical experience in administrative and banking operations as part of a national employment initiative.

PUBLICATIONS

- Dilshan, M. M. C., and Perera, A. A. I. *Radio Mean Number of Pendant Graphs*. North American Academic Research (NAAR 2023).
- Dilshan, M. M. C., and Perera, A. A. I. Chromatic Number Based on Incidence Colouring for Ladder Graph Family. International Conference on Business Innovation Mathematics Section (ICOBI 2023).
- Dilshan, M. M. C., and Perera, A. A. I. Radio Mean Number of Pendant Graphs for Even Cycles with Odd Diameter. Faculty Annual Research Session (FARS 2022).

- Dilshan, M. M. C., and Perera, A. A. I. *Radio Mean Number for Pendant Graphs*. Science Undergraduate Research Symposium (SURS 2022).
- Dilshan, M. M. C., and Perera, A. A. I. Radio Mean Number of Pendant Graphs for Odd Diameter. International Conference on Applied Sciences (ICAPS).
- Dilshan, M. M. C., Kapuhennayaka, S., and Perera, A. A. I. *Odd Harmonies Labelling for Ladder Graphs*. International Conference on Mathematics and Mathematics Education (ICMME 2023).
- Dilshan, M. M. C., and Perera, A. A. I. *Incidence Coloring of Star Graphs*. International Conference on Mathematics and Mathematics Education (ICMME 2023).
- Dilshan, M. M. C., and Perera, A. A. I. *Graph Labeling and Harmonies: Odd and Even Labeling of Star Graphs.*Peradeniya University International Research Sessions (iPURSE 2023).
- Dilshan, M. M. C., and Perera, A. A. I. Chromatic Number Based on Incidence Coloring for Cycles. Annual Research Session (ARS 2023).
- Dilshan, M. M. C., and Perera, A. A. I. Parity Constraints in Graph Labelings: Investigating the Incompatibility of Odd Harmonies in Graphs with Odd Loops. Faculty Annual Research Session (FARS 2023).

Skills and Languages

- **Programming:** Proficient in Julia, Python, MATLAB, HTML, CSS, JavaScript, Bash scripting; experienced with Git and Linux-based HPC environments.
- Software/Tools: Familiar with scientific computing packages such as PySCF, PwSCF, and Psi4; experienced in job scheduling and submission using SLURM.
- Languages: Sinhala (native), English (fluent), Tamil (intermediate).

Relevant Coursework

Rensselaer Polytechnic Institute, Department of Mathematical Sciences, Physics, and Computer Science.

- Math 6800: Computational Linear Algebra
- Math 6890: Mathematical Foundations of Modern Quantum Many-body Theory
- Math 6820: Numerical Solution of ODEs
- Math 6620: Perturbation Methods
- Matp 6610: Computational Optimization
- Matp 6600: Introduction to Optimization
- Phys 6510: Quantum Mechanics I
- CSCI 1200: Data Structures

LEADERSHIP AND SERVICE ACTIVITIES

Rensselaer Polytechnic Institute - Troy, NY

2025 - Present

Founding Chair - Math Frontier Seminar:

• This seminar focuses on numerical methods with an emphasis on applications.