RUI (RAY) QU

Curriculum Vitae

Houston, TX — rq10@rice.edu — ray-qu.com

EDUCATION

Ph.D. in Computational and Applied Mathematics
Aug 2022 - Dec 2026 (expected)
Rice University
Advisor: Jesse Chan
GPA: 4.0/4.0

M.A. in Computational and Applied Mathematics
Aug 2022 - Dec 2024
Rice University
Advisor: Jesse Chan
GPA: 4.0/4.0

B.S. in Statistics and Analytics
B.S. in Mathematics
Aug 2018 - Aug 2021
The University of North Carolina at Chapel Hill
GPA: 3.96/4.0 (Highest Distinction)

RESEARCH INTERESTS

Reduced Order Modeling, Numerical Methods for PDEs, Mathematical Physics

EXPERIENCE/EMPLOYMENT

Chan Research Group, Rice University Department of CMOR
Jan 2023 - Present
PI: Dr. Jesse Chan
Position: Graduate Research Assistant
Description: Extending reduced order modeling (ROM) of nonlinear conservations laws from finite volume methods (FVMs) to discontinuous Galerkin (DG) methods with new hyper-reduction techniques.

Group of Applied Mathematics and Plasma Physics (T-5), Los Alamos National Laboratory
June 2024 - Aug 2024
PI: Dr. Svetlana Tokareva
Position: Graduate Research Assistant
Description: Applied model order reduction to stochastic finite volume methods (SFVM) for uncertainty quantification (UQ) in high-dimensional stochastic PDE systems.

Physical Math Lab, UNC-Chapel Hill Department of Mathematics
Oct 2019 - Aug 2022
PI: Dr. Pedro Sáenz
Position: Undergraduate/Postbac Research Assistant
Description: Conducted research on active spintronics enabling bistability-based computations within hydrodynamic spin lattices (HSLs).

PUBLICATIONS

Preprint

Model order reduction techniques for the stochastic finite volume method. **Ray Qu**, Jesse Chan, Svetlana Tokareva. arXiv:2507.05091

Entropy stable reduced order modeling of nonlinear conservation laws using discontinuous Galerkin methods. **Ray Qu**, Akil Narayan, Jesse Chan. arXiv:2502.09381

Thesis

Entropy stable reduced order modeling of nonlinear conservation laws using discontinuous Galerkin methods. **Ray Qu**. Master's Thesis, Rice University. Full text.

AWARDS AND HONORS

2025 SIAM TX-LA Annual Meeting Travel Award
2025 SIAM CSE Travel Award
2024 MORe Travel Award
2024 Alan Weiser Memorial Award for Student Excellence
2021 UNC Summer Graduation Scholarship

CONFERENCE AND INVITED TALKS

Talks

Model order reduction techniques for the stochastic finite volume method
May 2025, Houston, TX
RTG-NASC Ranch Retrea

Entropy stable reduced order modeling of nonlinear conservation laws using DG methods
Mar 2025, Fort Worth, TX
2025 SIAM Conference on Computational Sciecne and Engineering (CSE)

Nov 2024, Houston, TX
CMOR Grad Seminar

Oct 2024, Houston, TX
RTG-NASC Annual Workshop

Jul 2024, Vancouver, Canada
16th World Congress on Computational Mechanics (WCCM)

Apr 2024, Houston, TX
RTG-NASC Ranch Retreat

Mar 2024, Houston, TX
Finite Element Rodeo

Feb 2024, Houston, TX
CMOR Grad Seminar

Posters

Entropy stable reduced order modeling of nonlinear conservation laws using DG methods
Sep 2024, La Jolla, CA
Model Reduction and Surrogate Modeling (MORe)

Nov 2023, Lafayette, LA
SIAM TX-LA 6th Annual Meeting

Oct 2023, Houston, TX
RTG-NASC Annual Workshop

Attendee

Mar, 2023, College Station, TX
Finite Element Rodeo

Nov, 2022, Houston, TX
SIAM TX-LA 5th Annual Meeting

TEACHING EXPERIENCE

CMOR 423/523 Numerical Methods for PDEs (Spring 2025, Grader)
CMOR 304 Differential Equations in Engineering and Science (Fall 2024, Teaching Assistant)
CMOR 527 Discontinuous Galerkin Methods (Spring 2024, Grader)
CMOR 302 Matrix Analysis (Fall 2023, Teaching Assistant)
CAAM 382 Stochastic Models (Spring 2023, Grader)
CAAM 378 Intro to OR and Optimization (Fall 2023, Grader)

SERVICE TO DEPARTMENT

2025 RTG-NASC Ranch Retreat Organizing Committee
Organizing the annual RTG-NASC Racnh Retreat with invited talks.

2023-2024 Rice CMOR Grad Seminar Chair
Hosted CMOR weekly grad seminar talks from graduate students and faculty members.

Member, Research Training Group in Numerical Mathematics and Scientific Computing (RTG-NASC)
Actively participating different activities in the research training group, such as annual workshops, ranch retreats, seminars, etc.