

# RUI (RAY) QU

## Curriculum Vitae

Houston, TX — Ray.Qu@rice.edu — (919) 904-9996 — ray-qu.com

### EDUCATION

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#### Ph.D. in Computational and Applied Mathematics

Aug 2022 - May 2027 (expected)

Rice University

Department of Computational Applied Mathematics and Operations Research

Advisor: Dr. Jesse Chan

GPA: 4.0/4.0.

#### B.S. in Statistics and Analytics; B.S. in Mathematics (with Highest Distinction)

Aug 2018 - Aug 2021

The University of North Carolina at Chapel Hill

Department of Statistics and Operations Research; Department of Mathematics

GPA: 3.96/4.0.

### RESEARCH INTERESTS

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Reduced Order Modeling, Numerical Methods for PDEs, Mathematical Physics

### EXPERIENCE/EMPLOYMENT

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#### Chan Research Group, Rice University Department of CMOR

Jan 2023 - Present

PI: Dr. Jesse Chan

Position: Graduate Research Assistant

Description: Extending reduced order modeling of nonlinear conservation laws from finite volume methods to discontinuous Galerkin 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 that solve uncertain quantification in high-dimensional stochastic partial differential equations.

#### Physical Math Lab, UNC-Chapel Hill Department of Mathematics

Oct 2019 - Aug 2022

PI: Dr. Pedro Sáenz

Position: Undergraduate/Postbac Research Assistant

Description: Conducted theoretical research and performed numerical experiments to investigate active spin-waves such as precession and shock waves within hydrodynamic spin lattices (HSLs).

### PUBLICATIONS

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#### Refereed Journal Article

##### Thesis

(in prep) *Entropy stable reduced order modeling of nonlinear conservation laws using discontinuous Galerkin methods.* **Qu, R.** Master's Thesis, Rice University.

### AWARDS AND HONORS

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2024 MORE Participation Award

2024 Alan Weiser Memorial Travel Award

## 2018 UNC Summer Graduation Scholarship

### CONFERENCE AND INVITED TALKS

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#### Talks

**Entropy stable reduced order modeling of nonlinear conservation laws using DG methods**

Date: July 2024

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

**Entropy stable reduced order modeling of nonlinear conservation laws using DG methods**

Date: Mar 2024

Finite Element Rodeo (Houston, TX)

**Entropy stable reduced order modeling of nonlinear conservation laws using DG methods**

Date: Feb 2024

Rice CMOR Graduate Seminar (Houston, TX)

#### Posters

**Entropy stable reduced order modeling of nonlinear conservation laws using DG methods**

Date: Nov 2023

SIAM TX-LA 6th Annual Meeting (Lafayette, LA)

**Entropy stable reduced order modeling of nonlinear conservation laws using DG methods**

Date: Oct 2023

Rice RTG-NASC Annual Workshop (Houston, TX)

#### Attendee

Date: Mar, 2023

Finite Element Rodeo (College Station, TX)

Date: Nov, 2022

SIAM TX-LA 5th Annual Meeting (Houston, TX)

### TEACHING EXPERIENCE

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**CMOR 527 Discontinuous Galerkin methods (Spring 2024)**

Rice University, Grader

**CMOR 302 Matrix Analysis (Fall 2023)**

Rice University, Teaching Assistant

**CAAM 382 Stochastic Models (Spring 2023)**

Rice University, Grader

**CAAM 378 Intro to OR and Optimization (Fall 2023)**

Rice University, Grader

### SERVICE TO DEPARTMENT

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**2023-2024 Rice CMOR Grad Seminar Chair**

Hosted CMOR grad seminar talks from graduate students, undergraduate students, and faculty members weekly.

**Member, Research Training Group in Numerical Mathematics and Scientific Computing (RTG-NASC)**

Actively participating different activities in the research training group.

## PROFESSIONAL SKILLS

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### Coding

Julia, Java, Python, C++, MATLAB, R.

## COURSEWORK

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### Research Relevant Coursework

Rice CMOR 526 Finite Element Methods

Rice CAAM 553 Advanced Numerical Analysis

Rice CAAM 542 Discontinuous Galerkin Methods

Rice CAAM 536 Numerical Methods for PDEs

### Other Coursework

Rice CAAM 571 Linear and Integer Programming

Rice CAAM 554 Systems of Equations and Unconstrained Optimization

UNC MATH 594 Nonlinear Dynamics

UNC MATH 548 Combinatorial Math

UNC STOR 614 Advanced Optimization

UNC STOR 556 Advanced Methods of Data Analysis