

# Rundong Zhou

## Curriculum Vitae

### Contact Information

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### Research Interests

Fluid mechanics, Computational physics, Dynamical systems, Numerical and harmonic analysis, Spectral methods, Physical oceanography, and Atmospheric Sciences

### EDUCATION

Candidate for **Master of Science**  
**Major in Complex Adaptive Systems**  
Chalmers University of Technology

expected June 2024

cGPA 5/5

Gothenburg, Sweden

**Erasmus+ Exchange Program**  
**Placement in the Physics of Fluids group**  
University of Twente

August 2023 - June 2024

Enschede, Netherlands

*Master's thesis supervisor:* Dr. Chris Howland and Prof. Detlef Lohse

**Bachelor of Applied Science in Engineering Science**  
**Major in Engineering Physics**  
University of Toronto  
*Bachelor's thesis supervisor:* Prof. Nicolas Grisouard

June 2021

cGPA 3.28/4

Toronto, Canada

**Summer School in Mathematical Fluid Mechanics**  
Université Grenoble Alpes, Institut Fourier

June 2023

Grenoble, France

### LIST OF PUBLICATION

Zhou, R. and Grisouard, N. *Spectral solver for Cauchy problems in polar coordinates using discrete Hankel transforms*. arXiv preprint. Submission pending. [arXiv:2210.09736](https://arxiv.org/abs/2210.09736)

### HONOURS AND AWARDS

**Avancez Scholarship**  
Chalmers University of Technology

2022 - 2024

75% tuition fee reduction, increased to 85% reduction in the second year for excellency.

**Erasmus+ Exchange Travel Grant**  
Chalmers University of Technology, and University of Twente

2023 - 2024

**Undergraduate Research Fellowship**  
Canadian Institute for Theoretical Astrophysics  
C\$ 2000 per month for four months.

2018

**Dean's Honor List**  
University of Toronto

2015 Fall, 2016 Fall  
2020 Fall, 2021 Winter

Pass with honor, >80% average.

### RESEARCH EXPERIENCE

**Master's Thesis**  
Department of Applied Physics, University of Twente  
*Supervisor:* Dr. Chris Howland and Prof. Detlef Lohse

August 2023 - June 2024

Enschede, Netherlands

**Bachelor's Thesis**  
Department of Physics, University of Toronto  
*Supervisor:* Prof. Nicolas Grisouard

September 2020 - April 2021

Toronto, Canada

Developing a novel spectral method for solving the Gross-Pitaevskii equation for Bose-Einstein condensates in polar coordinates. Experience with computational physics.

**Research Assistant<sup>1</sup>**

April 2021 - October 2022

Department of Physics, University of Toronto

*Supervisor:* Prof. Nicolas Grisouard

Applying the novel Fourier-Bessel based spectral method using the discrete Hankel transform to more general problems. Error analysis and validation of the method. Experience with numerical analysis and spectral theorems.

**Summer Undergraduate Research Program**

May - September 2018

Canadian Institute for Theoretical Astrophysics

Toronto, Canada

*Supervisor:* Prof. Norm Murray

Experience with data analysis on Galactic Legacy Infrared Midplane Survey Extraordinaire (GLIMPSE) database.

**Research Assistant**

January - April 2022

Department of Mechanical Engineering, University of Ottawa

*Supervisor:* Prof. Natalie Baddour

Developing a new type of 2-D discrete Fourier transform in polar coordinates using Dini series. Validating the discrete orthogonality relation with Hankel-Scaffidi integral. Experiences with complex analysis.

**PROFESSIONAL EXPERIENCE****Intern Technical Interpreter**

October - December 2019

Baoshan Iron &amp; Steel Co., Ltd., and PMC-Colinet Industries

Shanghai, China

*Supervisor:* Marcello Mameli

English and Mandarin. RPP07-3 CNC pipe finishing machine bearing replacement and refurbishment project at Baoshan Iron & Steel Co., Ltd..

**Featured Courses**

**Toronto:** Continuum Mechanics, Computational Physics, Nonlinear Physics, Statistical Mechanics, Groups and Symmetry

**Chalmers:** Dynamical Systems, Non-equilibrium Processes in Physics Chemistry and Biology, Quantum Field Theory, Artificial Neural Networks

**Twente:** Advanced Fluid Mechanics, Turbulence, Granular Matter, Advanced Colloids and Interfaces

**Programming Skills**

**Python, Matlab, L<sup>A</sup>T<sub>E</sub>X, Mathematica:** Advanced

**C, Dedalus Libraries:** Intermediate

Latest Update: April 7, 2023

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<sup>1</sup>As the continuation of the bachelor's thesis.