

# Michael Boyuan Zhu, PhD, ASA

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## Academic Experience

**Assistant Professor of Actuarial Science**, University of Hong Kong

2025 – present

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## Education

**Ph.D. – Actuarial Science**, University of Waterloo

2025

- Supervisor: Prof. Mario Ghossoub
- Thesis: Efficiency and Equilibria in Centralized and Decentralized Insurance Markets

**Master of Mathematics – Actuarial Science**, University of Waterloo

2020

- Thesis: Cost Efficient Contingent Claims with Choquet Pricing

**Honours Bachelor of Mathematics**, University of Waterloo

2018

- Mathematical Finance, Computer Science Minor
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## Professional Designation

**ASA**: Associate of the Society of Actuaries

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## Research Interests

Actuarial science, quantitative risk management,  
game theory, ambiguity and risk uncertainty, behavioral finance

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## Publications and Manuscripts

### Peer-reviewed journal articles

1. **Subgame Perfect Nash Equilibria in Large Reinsurance Markets** (with Maria Andraos, Mario Ghossoub). *Insurance: Mathematics and Economics*, forthcoming. [arXiv]
2. **Efficiency in Pure-Exchange Economies with Risk-Averse Monetary Utilities** (with Mario Ghossoub). *Mathematical Finance*, 36(1):99-117, 2026. [e]
3. **Pareto-Optimal Peer-to-Peer Risk Sharing with Robust Distortion Risk Measures** (with Mario Ghossoub, Wing Fung Chong). *ASTIN Bulletin*, 55(3):537-563, 2025. [e]
4. **Risk-Constrained Portfolio Choice under Rank-Dependent Utility** (with Mario Ghossoub). *Finance and Stochastics*, 29(2):399-442, 2025. [e]
5. **Stackelberg Equilibria with Multiple Policyholders** (with Mario Ghossoub). *Insurance: Mathematics and Economics*, 116(1):189-201, 2024. [e]

6. **Pareto-Optimal Insurance with an Upper Limit on the Insurer's Exposure** (with Oma Coke, Mario Ghossoub). *Scandinavian Actuarial Journal*, 2024(3):227-251, 2024. [  ]
  7. **Equilibria and Efficiency in a Reinsurance Market** (with Tim Boonen, Mario Ghossoub). *Insurance: Mathematics and Economics*, 113(1):24-49, 2023. [  ]

## Pre-publication manuscripts and working papers

- <sup>1</sup>. **Loss Aversion for Decision under Risk** (with Mario Ghossoub). *Working paper*.

## Academic Presentations

1. **Efficiency and Equilibria in (Re)Insurance Markets** – Quantact Actuarial and Financial Mathematics Research Seminar (Jan. 2025)
  2. **Pareto-Efficient Contracts in Centralized vs. Decentralized Insurance Markets, with an Application to Flood Risk** – 27th International Congress on Insurance: Mathematics and Economics (Jul. 2024)
  3. **Equilibria and Efficiency in a Reinsurance Market** – 26th International Congress on Insurance: Mathematics and Economics (Jul. 2023)
  4. **Insurance with Heterogeneous Beliefs: A Sequential Game Model** – Waterloo 3rd Student Conference in Statistics, Actuarial Science, and Finance (Oct. 2022)
  5. **Risk Sharing with Heterogeneous Beliefs** – University of Amsterdam (Jun. 2022)
  6. **Risk-Constrained Portfolio Choice via Quantiles** – Waterloo 2nd Student Conference in Statistics, Actuarial Science, and Finance (Nov. 2021), 56th Actuarial Research Conference (Aug. 2021), 24th International Congress on Insurance: Mathematics and Economics (Jul. 2021)
  7. **Cost-Efficient Contingent Claims with Choquet Pricing** – Canadian Operational Research Society Annual Conference (Jun. 2021), University of Waterloo Statistics and Actuarial Science Presentation Day (Feb. 2021)

## Professional Service

## Conference Co-Chair – 4th WSSAF

October 27-28, 2023

- One of two student organizers in charge of the 4th Waterloo Student Conference in Statistics, Actuarial Science and Finance. Duties included contacting external speakers, managing volunteers, event logistics, etc.

**Research Mentor** – Women in Mathematics (WiM) Directed Reading Program

January – April 2023

- Mentored a female undergraduate student from the Faculty of Mathematics as part of the WiM Directed Reading Program. Focused on the topic of economic equilibria from mathematical economics.

**Conference Volunteer, Session Chair – 2nd, 3rd WSSAF**

October 2021, 2022

- Assisted with the 2nd and 3rd editions of the Waterloo Student Conference in Statistics, Actuarial Science and Finance. Reviewed abstracts and served as session chair.

Peer-Review Service

- *ASTIN Bulletin, North American Actuarial Journal, Scandinavian Actuarial Journal, International Review of Economics and Finance.*

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## Teaching Experience

### Sessional Instructor, University of Waterloo

- ACTSC 446/846 – Mathematics of Financial Markets Fall 2023

### Teaching Assistant, University of Waterloo

- ACTSC 971 – Finance 2 2021, 2024
- ACTSC 446/846 – Mathematics of Financial Markets 2020, 2021, 2023
- ACTSC 445/845 – Quantitative Enterprise Risk Management 2021
- ACTSC 631 – Financial Mathematics III 2020, 2021, 2022, 2023
- ACTSC 633 – Actuarial Risk Management 2022
- ACTSC 634 – Quantitative Risk Management 2020, 2021, 2023
- ACTSC 635 – Professional Communications in Actuarial Science 2022
- ACTSC 372 – Corporate Finance 2021, 2022
- STAT 333 – Applied Probability 2019, 2020
- STAT 231 – Statistics 2019

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## Selected Honors and Awards

- James C. Hickman Scholar – SOA 2022-2025
- Ontario Graduate Scholarship 2022-2025
- D.A. Sprott Entrance Award – University of Waterloo 2020
- Actuarial Science Doctoral Entrance Award – University of Waterloo 2020
- NSERC Undergraduate Student Research Award 2016

Last updated: Jan. 2026