

EMMA KROELL

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EDUCATION

University of Toronto

September 2020–August 2025

PhD Candidate, Department of Statistical Sciences

Supervisors: Dr. Sebastian Jaimungal and Dr. Silvana Pesenti

McMaster University

September 2019–August 2020

Master of Science, Department of Mathematics and Statistics

GPA: 11.8 on a 12-point scale

Project: Sensitivity analysis of a Keen-based economic model with climate

Supervisors: Dr. Matheus Grasselli and Dr. Benjamin Bolker

McMaster University

September 2014–April 2019

Bachelor of Arts, Honours Mathematics and Economics

GPA: 12.0 on a 12-point scale

Undergraduate project: Modelling the economy and climate together: a two-region model

Supervisors: Dr. Matheus Grasselli and Dr. Benjamin Bolker

PUBLICATIONS

Peer-reviewed publications

Kroell, E., Jaimungal S., Pesenti, S. M., *Optimal Robust Reinsurance with Multiple Insurers*, Scandinavian Actuarial Journal, published online Nov. 2024.

Kroell, E., Pesenti, S. M., Jaimungal S., *Stressing Dynamic Loss Models*, Insurance: Mathematics and Economics, Vol. 114, 56-78, 2024.

Bolker, B.M., Grasselli, M.R. and **Holmes, E.[†]**, *Sensitivity analysis of an integrated climate-economic model*, SIAM J. Finan. Math., Vol.12(2), p.SC-44–SC-57, 2021.

Rein, H., Hernandez, D.M., Tamayo, D., Brown, G., Eckels, E., **Holmes, E.[†]**, Lau, M., Leblanc, R., Silburt, A., *Hybrid symplectic integrators for planetary dynamics*, Monthly Notices of the Royal Astronomical Society, Vol. 485, No. 4, 5490-5497, 2019.

In preparation

Kroell, E., Jaimungal S., Pesenti, S. M., *Model Ambiguity in Risk Sharing with Monotone Mean-Variance*, in preparation, 2024.

SELECT AWARDS & FELLOWSHIPS

Presentation Award, Waterloo Student Conference in Stats., Act. Science, and Finance 2024

Best Poster Award (audience selected), 8th Eastern Conference in Mathematical Finance 2024

NSERC Canada Graduate Scholarship – Doctoral 2022–25

Actuarial Science Student Research Presentation Award, Statistical Society of Canada 2022

Department of Statistical Sciences Leadership Award, University of Toronto 2022

Ontario Graduate Scholarship 2021–23

NSERC Canada Graduate Scholarship – Master’s (declined) 2020–21

NSERC Undergraduate Summer Research Award 2019

[†]Published under my previous name.

INVITED AND CONTRIBUTED PRESENTATIONS

Invited Talks

Seminar on Risk Man. & Act. Science (junior researchers), University of Waterloo, Canada *Oct. 2023*
49th Annual Meeting of the Statistical Society of Canada, virtual *June 2022*
FUSRP Research Series, Fields Institute, Toronto, virtual *July 2021*

Selected Contributed Presentations

Waterloo Student Conference in Stats., Act. Science, and Finance, Waterloo, Canada *Oct. 2024*
8th Eastern Conference on Mathematical Finance, Toronto, Canada (poster) *Sept. 2024*
27th International Congress on Insurance: Mathematics & Economics, Chicago, Illinois *July 2024*
2024 Statistical Society of Canada Annual Meeting, St. John's, Canada *June 2024*
Waterloo Student Conference in Stats., Act. Science, and Finance, Waterloo, Canada *Oct. 2023*
Fields-CFI Conference, Toronto, Canada (poster) *Sept. 2023*
26th International Congress on Insurance: Mathematics & Economics, Edinburgh, Scotland *July 2023*
2023 Statistical Society of Canada Annual Meeting, Ottawa, Canada *May 2023*
Waterloo Student Conference in Stats., Act. Science, and Finance, Waterloo, Canada *Oct. 2022*
2022 Gene Golub SIAM Summer School on Financial Analytics, L'Aquila, Italy (poster) *Aug. 2022*
The 25th International Congress on Insurance: Mathematics and Economics, virtual *July 2022*

TEACHING EXPERIENCE

Course Instructor

Stochastic Methods, ACT460/STA2502, University of Toronto *Fall 2023, Fall 2024*
DoSS Mathematics Summer Prep Bootcamp, University of Toronto *July 2022, July 2023*
Mathematics of Investment & Credit, ACT240, University of Toronto *May–June 2023*

Curriculum Development

Academic Advisor, Fields Institute (Toronto) *Sept. 2021–Dec. 2023*
DoSS Operational Math Bootcamp, University of Toronto *April–June 2022*

Teaching Assistantships

University of Toronto, 12 courses in statistics and actuarial science *Sept. 2020–April 2025*
McMaster University, five courses in mathematics *Sept. 2018–April 2020*

ACADEMIC SERVICE

Journal Referee

Insurance: Mathematics and Economics, Computational & Applied Mathematics

Seminar and Conference Organization

Member and seminar organizer, CANSSI Ontario SPARK group *May 2024–April 2025*
Organizing Committee, ARES Seminar, CANSSI Ontario *Aug. 2022–April 2024*
Organizer, scientific & grant writing workshops, Dept. of Statistical Sciences *March 2023, Feb. 2025*
Scientific Committee, Canadian Statistics Student Conference, Ottawa, Canada *May 2023*
Lead Organizer, Statistics Student Research Day conference, University of Toronto *May 2022*

LANGUAGES, SKILLS, AND CERTIFICATIONS

Society of Actuaries exams & modules: P, FM, PAF, SRM, PA, FAM

Languages: English (native), French (intermediate/B2), German (beginner/A2)

Programming: R (advanced), Python (intermediate)

Last updated: February 13, 2025. Full academic CV available upon request.