# Andrew **Fleck**

Ph.D Candidate

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## Personal Statement

Doctoral candidate in Applied Mathematics primarily concerned with problems arising from finance and insurance. Specifically risk modelling and estimation, capital allocation and decision theory. Industry experience in variable and income annuity modelling and forecasting. Looking for "futuristic" industrial work that leverages this knowledge while allowing for further research opportunities.

## Education

**Carleton University** — *Ottawa, ON*

B.Sc. Double Honours in Mathematics and Physics — *June 2014*

**Toronto Metropolitan University** — *Toronto, ON*

M.Sc in Applied Mathematics — *September 2016*

Thesis: Trajectory Based Market Models with Operational Assumptions

**York University** — *Toronto, ON*

Ph.D in Applied Mathematics (ongoing) — *Awaiting Defence in Fall 2022*

## Tech Skills

**Programming** MATLAB, Python (numpy, scipy, pandas, scikit-learn)

**Software/OS** Mathematica, Maple, MS Office, Unix/Linux

## Experience

### Industrial

**The Risk and Insurance Studies Centre (RISC), York University** — *Toronto, ON*

HAIIvVE Supervisor — *Fall 2021*

- Every year RISC hosts cohorts of Hybrid Academia-Industry via Virtual Engagement (HAIIvVE) interns from YorkU. These interns "present solutions to real world problems in climate risk, strategic management, consumer research, nowcasting, and demographic projections".
- Each cohort is supervised by an industry supervisor and a academic supervisor (typically a faculty member).
- As academic supervisor joint with a counterpart at RBC we oversaw interns design and simulate a segregated fund style product with an associated maturity guarantee.

**CANNEX Financial Exchanges Limited (formerly QWeMA Group)** — *Toronto, ON*

MITACS Accelerate Intern — *Summer 2019 & 2021*

- Completed two MITACS roles with CANNEX with significant work in between and after. The project formed the basis of a portion of myself and another Ph.D candidates dissertation research.
- The project is concerned with the precise and consistent forecasting of fixed income annuity performance. The end product being reasonable ranking of annuity products.
- We used machine learning to accurately simulate relevant indices in a generic way and studied the stochastic volatility properties of said indices.

### Academic

**Toronto Met and York University** — *Toronto, ON*

Teaching Assistant — *Sept. 2014 - June 2022*

- Duties included preparation and instruction of tutorials.
- Required to lead discussions, lecture and supervise approximately 50 students at a time.
- Additionally through York University have worked aiding students individually or in smaller groups at a Math drop-in centre.
- In both universities a significant portion of work responsibilities consisted of the grading of tests and exams.

**York University** — *Toronto, ON*

Course Director, M4281 — *Winter 2021*

- Math 4281: Ruin and Credibility is an introduction to intermediate level mathematical risk theory. The course ensures an adequate preparation for exam C of the Society of Actuaries.
- Topics covered were collective and individual risk models, probability of ruin and prospective experience rating.

# Notable Writing and Talks

### Trajectorial asset models with operational assumptions

Co-author *Nov. 2019*

- Available here.

### Ergodicity Economics 2021 & 2022 *London, UK*

Presenter in Finance and Utility Theory Sections *Jan. 2021 & 2022*

- Available here and here.

### Waterloo Student Conference in Statistics, Actuarial Science and Finance *Waterloo, ON*

Presenter *Oct. 2019 & 2021*

# Notable Honors/Awards

2016 **Winner**, Ontario Graduate Scholarship
2017 **Recipient**, CAS and SOA CKER Grant
2021 **Nominee**, Math and Stats TA award
2022 **Nominee**, Math and Stats TA award