Marcel Kieren Goh (吴麒仁)

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Personal and Contact Information

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Education

Visiting term — **January 2026 – present**
University of Cambridge — *Cambridge, United Kingdom*
Host supervisor: Timothy Gowers.

Ph.D. Mathematics — **September 2023 – present**
McGill University — *Montréal, QC, Canada*
Supervisor: Hamed Hatami.

M.Sc. Mathematics — **May 2021 – August 2022**
McGill University — *Montréal, QC, Canada*
Supervisor: Luc Devroye. CGPA: 4.00/4. Thesis: Structural properties of conditional Galton–Watson trees.

B.Sc. Joint Honours Mathematics and Computer Science — **September 2017 – April 2021**
McGill University — *Montréal, QC, Canada*
Minor: Linguistics. CGPA: 3.84/4.

Exchange semester — **February – June 2019**
Faculty of Mathematics and Physics, Charles University — *Prague, Czech Republic*
Grade: 1 on all courses (highest score attainable).

Awards and Funding

NSERC Canada Graduate Scholarship – Doctoral ($115,000) — **September 2023 – August 2026**
Constance Rooke CNF Prize ($1,250) — **October 2024**
FRQNT Bourse de doctorat en recherche ($100,000) — **[Declined]**
NSERC Canada Graduate Scholarship – Master's ($17,500) — **May 2021 – April 2022**
NSERC Undergraduate Student Research Award ($7,125) — **May – August 2020**
Governor General's Academic Medal – Bronze — **June 2015**

Research Interests

Additive combinatorics, enumerative combinatorics, analysis of random discrete structures.

Papers (in reverse order of acceptance, not necessarily appearance)

P9. (with Hamed Hatami) Block complexity and idempotent Schur multipliers. To appear in *International Mathematics Research Notices*. [arXiv:2506.21752]

P8. (with Tsun-Ming Cheung and Luc Devroye) A note on plane trees with decreasing labels. *Online Journal of Analytic Combinatorics* **20** (2025), #2, 9 pp. [arXiv:2502.14596]

P7. An uncertainty principle for Möbius inversion on posets. To appear in *Contributions to Discrete Mathematics*. [arXiv:2302.02466]

P6. (with Jonah Saks) On the homology of several number-theoretic set families. *Enumerative Combinatorics and Applications* **4**,2 (2024), #S2R12, 11 pp. [arXiv:2206.12535]

P5. (with Jad Hamdan and Jonah Saks) The lattice of arithmetic progressions. *Australasian Journal of Combinatorics* **84**,3 (2022), 357–374. [arXiv:2106.05949]

P4. (with Luc Devroye and Rosie Y. Zhao) On the peel number and the leaf-height of a Galton–Watson tree. *Combinatorics, Probability and Computing* **32**,1 (2023), 68–90. [arXiv:2106.14389]

P3. (with Anna M. Brandenberger, Luc Devroye, and Rosie Y. Zhao) Leaf multiplicity in a Bienaymé–Galton–Watson tree. *Discrete Mathematics and Theoretical Computer Science* **24**,1 (2022), #7, 16 pp. [arXiv:2105.12046]

P2. (with Anna M. Brandenberger and Luc Devroye) Root estimation in Galton–Watson trees. *Random Structures and Algorithms* **61**,3 (2022), 520–542. [arXiv:2007.05681]

P1. (with Rosie Y. Zhao) Arithmetic subsequences in a random ordering of an additive set. *Integers: Electronic Journal of Combinatorial Number Theory* **21** (2021), #A89, 19 pp. [arXiv:2012.12339]

Submitted

- (with Hamed Hatami) Block structure in boolean matrices of small factorization norm. *arXiv:2507.00872* (2025), 14 pp.
- On an entropic analogue of additive energy. *arXiv:2406.18798* (2025), 19 pp.

Reports and Theses

R5. Structural properties of conditional Galton–Watson trees. M.Sc. thesis, McGill University (Montréal, Québec, August 2022), vi + 75 pp.

R4. Finding regularity in Tlingit verb prefixes. Semester project report, McGill University (Montréal, Québec, April 2021), 7 pp.

R3. Grid-building algorithms on manifolds. Summer research report, McGill University (Montréal, Québec, August 2020), 10 pp.

R2. Typechecking proof scripts: making interactive proof assistants robust. Honours project report, McGill University (Montréal, Québec, December 2019), 10 pp.

R1. The OPythn programming language. Software project report, Charles University (Prague, Czech Republic, June 2019), 10 pp.

Invited Talks

- Block complexity and idempotent Schur multipliers. 7 December 2025, CMS Winter Meeting, Toronto.

Published Creative Writing (∗ indicates nonfiction)

F5. "Syazwani," *The Ex-Puritan* **71** (2025), online.

*__F4.__ "Lanterns," *The Malahat Review* **229** (2025), 7–13. Winner of the 2024 Constance Rooke Creative Nonfiction Prize. Honourable Mention in the Personal Journalism category of Canada's 2025 National Magazine Awards.

F3. "Senang Diri," *Existere* **42**,2 (2023), 17–25.

F2. "The Vigil," *Ricepaper Magazine* (2023), online. Reprinted in *Best Canadian Stories 2025* (Windsor, Ont.: Biblioasis, 2024), 244–253. Reprinted in *Infusion* (Toronto, Ont.: Dark Helix Press, 2025), 37–47.

F1. "Mountain Pass," *Prairie Journal of Canadian Literature* **79** (2023), 48–55.

Work and Volunteer Experience (∗ indicates a paid position)

Editor-in-Chief — **December 2023 – present**
Ahoy Literary Magazine — *Montréal, QC, Canada*

Founding member and one of two directors of a non-profit organization that publishes poetry, prose, and art in a semiannual print magazine. In charge of English short fiction submissions as well as the overall typesetting. Share duties with other editors related to emails, sales, and magazine launches.

*__Teaching assistant__ **September 2021 – present**
McGill University *Montréal, QC, Canada*

Teaching assistant in the following courses. Duties include giving tutorials, holding office hours, and grading assignments and exams.

- Fall 2025: MATH 242 Analysis 1
- Winter 2024, Fall 2023: MATH 240 Discrete Structures
- Fall 2021: COMP 690 Probabilistic Analysis of Algorithms

*__Course lecturer__ **August – December 2024**
McGill University *Montréal, QC, Canada*

Instructor for a section of MATH 240 Discrete Structures. Duties included preparing and delivering lectures, designing assignment and exam questions, and holding office hours.

DRP Mentor **January 2022 – April 2024**
Department of Mathematics and Statistics, McGill University *Montréal, QC, Canada*

Met with undergraduate students as part of the Directed Reading Program on a weekly basis to give them an introduction to research-level mathematics in a casual setting.

- Winter 2024: Topics in additive combinatorics, with a particular focus on Roth's theorem.
- Winter 2022: Topics in extremal combinatorics related to the increasing triples problem, as well as topics related to Khovanskii's theorem.

*__After school care supervisor__ **January – June 2023**
Suzuki Charter School *Edmonton, AB, Canada*

Supervised and facilitated activities (e.g., arts and crafts, soccer, board games, drawing/colouring, movie days) for children in grades 1 through 6.

*__Software developer__ **January – May 2023**
Levven *Edmonton, AB, Canada*

Developed firmware for the manufacture and function of in-home IoT gateways, smart switches, and related electronic products. Worked primarily in C and Python. Contributed to the open-source Mongoose OS codebase.

*__Visiting teaching assistant__ **July 2022**
Bocconi University *Como, CO, Italy*

Teaching assistant for a two-week summer school on random structures and combinatorial statistics, which was organised by Bocconi University in collaboration with Oxford University and Imperial College London. Led problem sessions in the afternoons, with around forty graduate-level students in attendance.

First responder **October 2017 – September 2021**
McGill Student Emergency Response Team *Montréal, QC, Canada*

On call on a weekly basis to provide emergency medical care at campus residences overnight as well as at university events such as frosh, sports games, and formals. Attended team training sessions twice a month to keep first-aid skills up-to-date. Most recent first responder certification: September 2020.

*__Grader__ **September 2019 – April 2021**
Department of Mathematics and Statistics, McGill University *Montréal, QC, Canada*

Graded assignments in the following courses:

- Winter 2021: MATH 457 Honours Algebra 4
- Fall 2020: MATH 323 Probability, MATH 456 Honours Algebra 3
- Winter 2020: MATH 240 Discrete Structures
- Fall 2019: MATH 235 Algebra 1

*__Helpdesk tutor__ **September 2018 – April 2021**
Computer Science Undergraduate Society Helpdesk *Montréal, QC, Canada*

Held twice-weekly office hours to tutor students in a variety of undergraduate courses. Topics covered included elementary data structures and algorithms, command-line scripting, and functional programming. Recipient of the Tomlinson Engagement Award for Mentoring.

Vice President, Academic **May 2019 – January 2020**
Society of Undergraduate Mathematics Students *Montréal, QC, Canada*

Oversaw academic affairs within SUMS council and acted as liaison between the undergraduate community and mathematics faculty. Duties included representing the student body at department meetings, organising midterm and final review sessions, and helping students with academic concerns.

*__Painter__ **May – August 2018**
Bakir Contracting Corp. *Edmonton, AB, Canada*

Exterior painting (siding, decks, fences, trim, etc.) for residential clients.

*__Infantryman__ **August 2015 – August 2017**
Singapore Armed Forces *Singapore*

Held appointment of machine-gun team commander in the 3rd Battalion, Singapore Infantry Regiment. Led a six-person team consisting of a medic, signaller, sensor, and two-machine gunners within a rifle platoon. Most recent reserve training: December 2022.

*__Tutor__ **September 2014 – June 2015**
École Secondaire Beaumont Composite High School *Beaumont, AB, Canada*

Tutored various students in grades 4 through 11 in chemistry, physics, math, and French.

*__Summer camp counsellor__ **June – August 2014**
YoWoChAs Outdoor Education Centre *Fallis, AB, Canada*

Led children aged 4–15 through various activities (e.g., archery, canoeing, zipline) at a sleepaway camp.

Skills

Programming Languages
C, OCaml, Python, Java, PostScript, Haskell, Scheme Lisp, Standard ML, `CWEB`, `MIXAL`, MIPS Assembly.

Technologies
UNIX, Vim, TEX, Git.

Languages
Fluent: English, French. Proficient: Mandarin, Italian.

Other

- Recipient of 0x$3.40 in Knuth reward cheques.
- Contributed sequences A335562, A338550, A338993, A339941, A339942, A341822, A347580, A355145–A355147, and A360285 to the On-line Encyclopedia of Integer Sequences.