

Foster Tom

Curriculum Vitæ

Kemeny 318 Dartmouth College, Hanover NH foster.tom@dartmouth.edu www.math.dartmouth.edu/~ftom

Academic Positions

- 2025-2026 **Dartmouth College**
Lecturer, Mathematics
- 2022-2025 **Massachusetts Institute of Technology**
Instructor, Mathematics

Education

- 2018-2022 **University of California, Berkeley**
Ph.D., Mathematics, Supervised by Mark Haiman, Received May 2022
- 2016-2018 **University of British Columbia**
M.Sc., Mathematics, Supervised by Stephanie van Willigenburg
- 2012-2016 **University of British Columbia**
B.Sc., Honours Mathematics

Selected Awards

- 2025 George Lusztig Mentorship Award
- 2021 Math Department Summer Grant
- 2021 James H. Simons Fellowship
- 2018-2021 Natural Sciences and Engineering Research Council of Canada Postgraduate Scholarship-Doctoral
- 2018 Faculty of Science Graduate Prize
- 2017 Stanley M Grant Scholarship in Mathematics
- 2016 Wendy Fan Memorial Scholarship
- 2016 Faculty of Science Graduate Award
- 2016 Dr. R. D. James Medal in Mathematics
- 2015 R.O.T.T.O.W. Scholarship
- 2015 Reginald Palliser-Wilson Scholarship
- 2015 Ron Riddell and Roy Douglas Memorial Scholarship in Mathematics
- 2013-2015 Trek Excellence Scholarship for Continuing Students
- 2015 W H MacInnes Scholarship in Physics and Mathematics

Publications

Submitted

- 2025 [The chromatic symmetric function of graphs glued at a single vertex](#)
(with Aarush Vailaya)
- 2024 [Chromatic symmetric functions and change of basis](#)
(with Bruce Sagan)

Accepted

- 2025 **Graphs missing a connected partition**
Advances in Applied Mathematics
- 2025 **Adjacent cycle-chains are e -positive**
(with Aarush Vailaya)
Electronic Journal of Combinatorics

Appeared

- 2025 **A signed e -expansion of the chromatic quasisymmetric function**
Combinatorial Theory, Vol. 5, No. 2.
- 2023 **A horizontal-strip LLT polynomial is determined by its weighted graph**
Combinatorial Theory, Vol. 3, No. 3.
- 2021 **A combinatorial Schur expansion of triangle-free horizontal-strip LLT polynomials**
Combinatorial Theory, Vol. 1, No. 14.
- 2020 **Classifying the near-equality of ribbon Schur functions**
European Journal of Combinatorics, Vol. 90, 103197.
- 2019 **The number of rational points of hyperelliptic curves over subsets of finite fields**
(with Kristina Nelson, József Solymosi, and Ching Wong)
Involve, a Journal of Mathematics, Vol. 12, No.5, pp.755–765.
- 2018 **Necessary conditions for Schur maximality**
(with Stephanie van Willigenburg)
Electronic Journal of Combinatorics, Vol. 25, P2.30.

Refereed Conference

- 2025 **On e -positivity of trees and connected partitions**
- 2024 **A signed e -expansion of the chromatic symmetric function and some new e -positive graphs**
Séminaire Lotharingien de Combinatoire 91B.48 (2024)
- 2023 **Horizontal-strip LLT polynomials**
Séminaire Lotharingien de Combinatoire 89B.40 (2023)
- 2021 **A combinatorial Schur expansion of triangle-free horizontal-strip LLT polynomials**
Séminaire Lotharingien de Combinatoire 85B.18 (2021)
- 2018 **Schur-positivity of equitable ribbons**
(with Stephanie van Willigenburg)
Séminaire Lotharingien de Combinatoire 80B.18 (2018)

Presentations

Invited Conference

- 2025 **Graphs missing a connected partition**
Canadian Discrete and Algorithmic Mathematics Conference (CanaDAM)
- 2025 **A signed e -expansion of the chromatic quasisymmetric function**
Combinatorics on flag varieties and related topics 2025

2024 **Chromatic symmetric functions and change of basis**
Conference on Enumerative and Algebraic Combinatorics

2022 **Horizontal-strip LLT polynomials**
Banff International Research Station Workshop
2022 AMS Spring 2022 Western Sectional Meeting

Contributed

On e -positivity of the chromatic symmetric function
2024 University of Washington Combinatorics Seminar
2024 Dartmouth Combinatorics Seminar
2024 Richard P. Stanley Seminar in Combinatorics

A signed e -expansion of the chromatic quasisymmetric function
2024 Algebraic Combinatorics Virtual Expedition (AlCoVE)
2024 Formal Power Series and Algebraic Combinatorics Conference (FPSAC)
2024 Beijing Institute of Technology Seminar
2024 Brandeis Combinatorics Seminar
2024 UC Berkeley Combinatorics Seminar
2024 UBC Discrete Math Seminar
2023 Illinois Institute of Technology Discrete Applied Math Seminar

Horizontal-strip LLT polynomials
2023 Formal Power Series and Algebraic Combinatorics Conference (FPSAC)
2023 MIT-Harvard-MSR Combinatorics Seminar
2021 Rocky Mountain Algebraic Combinatorics Seminar
2021 UC Davis Algebraic Combinatorics Seminar
2021 Waterloo Algebraic and Enumerative Combinatorics Seminar

A combinatorial Schur expansion of triangle-free horizontal-strip LLT polynomials
2021 Formal Power Series and Algebraic Combinatorics Conference (FPSAC)
2021 Algebraic Combinatorics Virtual Expedition (AlCoVE)
2021 Canadian Discrete and Algorithmic Mathematics Conference (CanaDAM)
2021 UC Berkeley Combinatorics seminar
2021 York University Applied Algebra seminar
2021 Graduate Online Combinatorics Colloquium (GOCC)

Classifying the near-equality of ribbon Schur functions
2019 Canadian Discrete and Algorithmic Mathematics Conference (CanaDAM)
2018 UC Berkeley Combinatorics Seminar
2017 UBC Graduate Student Seminar

Necessary conditions for Schur maximality (with Stephanie van Willigenburg)
2018 Formal Power Series and Algebraic Combinatorics Conference (FPSAC)
2017 UBC Discrete Math Seminar
2016 Canadian Undergraduate Mathematics Conference

Conference Organization

2025 AlCoVE: an Algebraic Combinatorics Virtual Expedition
(with Laura Colmenarejo, Maria Gillespie, Oliver Pechenik, Liam Solus, and Lorenzo Vecchi)
2021 41st Bay Area Discrete Math Day, UC Berkeley
(with Jessica De Silva, Chris Eur, Max Hlavacek, Isabelle Shankar, and Mariel Supina)

Seminar Organization

2020 Shuffle Combinatorics Reading Seminar
(with Sylvie Corteel and Nicolle Gonzalez)

Mentorship

2025 MIT PRIMES (Program for Research in Mathematics, Engineering and Science)
(Student: Emma Li)
2024 MIT PRIMES (Program for Research in Mathematics, Engineering and Science)
(Student: Aarush Vailaya)

I received a George Lusztig mentorship award for this work.

Teaching

2025 Math 1: Introduction to Calculus
2025 Math 13: Calculus of Vector-valued Functions
2025 18.204: Undergraduate Seminar in Discrete Mathematics
2024 18.204: Undergraduate Seminar in Discrete Mathematics
2024 18.03: Differential Equations
2023 18.204: Undergraduate Seminar in Discrete Mathematics
2023 18.03: Differential Equations
2022 18.01A/18.02A: Calculus
2022 Math 113: Introduction to Abstract Algebra
2021 Math 1B: Calculus II
2021 Math N16A: Calculus I
2020 Math 1B: Calculus II
2020 Math N16A: Calculus I
2020 Math 1B: Calculus II
2019 Math 1A: Calculus I
2019 Math N16B: Calculus II
2019 Math 1B: Calculus II
2018 Math 1A: Calculus I