Alice Lacaze-Masmonteil

Personal Information

Nationalities:	Canadian and French
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Education

University of Ottawa, Ottawa, ON, Canada — 2020 -
Doctorate of Philosophy
Expected completion date: August 2024
Supervisor: Mateja Šajna
Thesis title: Certain resolvable directed cycle decompositions

Acadia University, Wolfville, NS, Canada — 2017 - 2019
Master's of Science
Supervisor: Nancy E. Clarke
Thesis title: Some problems on the game of Ambush Cops and Robbers

Acadia University, Wolfville, NS, Canada — 2012 - 2017
Bachelor of Pure and Applied Sciences with Honours
Supervisor: Nancy E. Clarke
Thesis title: Cordial labeling of some new and existing classes of graphs

Publications

[1] A. Lacaze-Masmonteil. Completing the solution of the directed Oberwolfach problem with cycles of uniform length, *Journal of Combinatorial Designs* **32** (2024), 5–30.

Presentations

Invited Presentations

Resolution of the directed Oberwolfach problem with cycles of uniform length, 10th Slovenian Conference on Graph Theory: Combinatorial Designs and their Applications Mini Symposium, Kranjska Gora, Slovenia — June 2023

Resolution of the directed Oberwolfach problem with cycles of uniform length, 2023 Canadian Mathematical Society Summer Meeting: Design Theory and Graph Decomposition Session, Ottawa, ON, Canada — June 2023

Resolvable directed cycle decompositions of the complete symmetric digraph, 2022 Canadian Mathematical Society Summer Meeting: Design Theory and Graph Decomposition Session, St. John's, NL, Canada — June 2022

Contributed Presentations

Resolution of the directed Oberwolfach problem with cycles of uniform length, 27th Ontario Combinatorics Workshop, Ottawa, ON, Canada	May 2023
Resolvable directed cycle decompositions of the complete symmetric digraph, 26th Ontario Combinatorics Workshop, Waterloo, ON, Canada	May 2022
The game of Ambush Cops and Robbers played on chordal graphs and outerplanar graphs, 25th Ontario Combinatorics Workshop, Online	May 2021
The game of Ambush Cops and Robbers played on the products of graphs, 2018 Canadian Mathematical Society Winter Meeting: Student Committee Research Session, Vancouver, BC, Canada	Dec. 2018
The game of Ambush Cops and Robbers played on the products of graphs, Acadia's 5th Annual Student Research and Innovation Conference, Wolfville, NS, Canada	Feb. 2018
On the cordiality of various unions of complete graphs , 12th East Coast Combinatorics Conference, Saint John, NB, Canada	Jul. 2017
On the cordiality of various unions of complete graphs, Annual Conference for Science Atlantic Mathematics, Statistics and Computer Science, Sydney, NS, Canada	Oct. 2016
Cordial labeling of closed chains of cycles and turtles, Annual Conference for Science Atlantic Mathematics, Statistics and Computer Science, Wolfville, NS, Canada	Oct. 2015

Seminar Presentations

On the directed Oberwolfach problem, Monash University Discrete Mathematics Seminar, Melbourne, VIC, Australia	Oct. 2023

Research Experience

Monash University, Melbourne, VIC, Australia — 2023
Visiting PhD student
In collaboration with Professor Daniel Horsley, I am aiming to complete the solution to the two-table case of the directed Oberwolfach problem.

University of Ottawa, Ottawa, ON, Canada — 2020-
Doctoral thesis
I resolved the last open case of the directed Oberwolfach problem with cycles of uniform length. I also investigated directed cycle decompositions of products of directed graphs. Namely, I made significant progress on a conjecture of Alsphach et al. (1990) which states that the lexicographic product of two Hamiltonian decomposable directed graphs is also Hamiltonian decomposable.

Acadia University, Wolfville, NS, Canada 2017 - 2019
Master's thesis
I investigated a variation of the pursuit-evasion game of Cops and Robbers (C&R) played on graphs dubbed Ambush C&R. In this variation, we applied a restriction on the cops' ability to move on the graph. My objective was to develop winning strategies for the cops on several classes of graphs. I first conducted a literature review in which I studied various winning strategies from the original game of C&R and then adapted these strategies to the game of Ambush C&R. Winning strategies were defined on outerplanar graphs, chordal graphs, and graph products.

Acadia University, Wolfville, NS, Canada 2015 - 2016
Honour's thesis
I conducted original research on a type of graph labeling known as cordial labeling. I determined when several classes of graphs admit a cordial labeling. To do so, I solved a set of diophantine inequalities and showed that the existence of a cordial labeling for certain classes of graphs was equivalent to the existence of a solution to these inequalities.

Scholarships and Prizes

University of Ottawa Department of Mathematics and Statistics Outstanding Student Paper Prize 2023
This prize is awarded annually by the Departmental Teaching Personnel Committee to the best paper published by a student.

Peter Rodney Memorial Book Prize 2023
Awarded to the best student talk given at the 27th Ontario Combinatorics Workshop.

Natural Sciences and Engineering Research Council of Canada (NSERC) Michael Smith Foreign Study Supplement 2023
Valued at $6,000. Awarded to fund travel to Monash University.

NSERC Canada Graduate Scholarship - Doctoral 2021 - 2024
Valued at $35,000 per year.

University of Ottawa Doctoral Admission Scholarship 2020 - 2024
Valued at $9,000 per year.

Catherine Stanley Memorial Scholarship 2018
Valued at $1,000. Awarded to a student that has demonstrated excellence and enthusiasm as a department teaching assistant.

NSERC Canada Graduate Scholarship - Master's 2017 - 2018
Valued at $17,500.

Acadia Undergraduate Mathematics Competition: Best Paper 2016

Teaching Experience

University of Ottawa, Ottawa, ON, Canada — 2023
Part-time professor
Courses (taught in French): Introduction to Linear Algebra (Winter 2023).

- Prepared course notes and material for directed discussion groups.
- Collaborated with other instructors to draft all course assessments.

University of Ottawa, Ottawa, ON, Canada — 2020 - 2021
Teaching assistant
Courses (taught in French): Advanced Linear Algebra, Introduction to Linear Algebra, and Mathematical Reasoning and Proofs.

- Marked assignments and taught directed discussion groups.
- Tutored students at the Mathematics and Statistics Help Center.

Acadia University, Wolfville, NS, Canada — 2013 - 2018
Teaching assistant
Courses (taught in English): Introduction to Linear Algebra, Linear Algebra 2, Introductory Calculus I and II, Matrix Algebra, Introduction to Differential Equations, Applied Statistics for Life Sciences I and II, and Applied Probability for Science and Engineering.

- Marked assignments and assisted professors with facilitating directed discussion groups.
- Tutored students at the Mathematics and Statistics Help Center.

Academic Service

Referee for the following journals and publications:

- Discussiones Mathematicae Graph Theory
- Bulletin of the Institute of Combinatorics and its Applications

2023 Canadian Mathematical Society (CMS) Summer Meeting — 2023
Design Theory and Graph Decomposition Session co-organizer

- Participated in organizational activities that included choosing and inviting speakers, and scheduling and chairing talks.

Canadian Mathematical Society Student Committee 2022 - 2024
Chair

- Assigned tasks and provided support and supervision to committee members.
- Chaired biannual committee meetings.
- Co-organized a student social event and the Student Committee Research Session at the 2023 CMS Summer Meeting.
- Co-organized the AARMS-CMS Student Poster Session at the 2022 CMS Winter Meeting.
- Evaluated funding applications for academic events from student groups from across Canada.

University of Ottawa Mathematics and Statistics Graduate Student Association Executive 2022 - 2023
President

- Supervised a team of seven members.
- Chaired monthly executive meetings.
- Co-organized social and educational events for graduate students in mathematics and statistics.

16th Ottawa Mathematics and Statistics Conference Organizing Committee 2022 - 2023
Chair

- Chaired committee meetings, applied for funding, and invited keynote speakers.
- Assigned tasks and provided support and supervision to committee members.
- Chaired several sessions of contributed talks.

27th Ontario Combinatorics Workshop Organizing Committee 2022 - 2023
Member

- Applied for and obtained funding from the University of Ottawa department of Mathematics and Statistics.
- Participated in organizational activities that included selecting keynote speakers and scheduling and chairing talks.

Canadian Mathematical Society Student Committee 2021 - 2022
Member

- Co-organized the Student Committee Research Session at the 2021 CMS Winter Meeting and 2022 CMS Summer Meeting.
- Evaluated funding applications for academic events from student groups from across Canada.

14th and 15th Ottawa Mathematics and Statistics Conference Organizing Committee 2020 - 2022
Member

- Participated in organizational activities that included selecting keynote speakers, scheduling and chairing talks, and advertising.

University of Ottawa Mathematics and Statistics Graduate Student Association Executive 2020 - 2022
Vice-president external

- Represented all graduate students in mathematics and statistics on the Board of Governor of the University of Ottawa Graduate Student Association.

Acadia's 5th Student Research and Innovation Conference Organizing Committee 2017 - 2018
Member

- Applied for and obtained funding from various departments.
- Participated in organizational activities that included selecting keynote speakers, scheduling and chairing talks, and advertising.

Acadia Graduate Student Association Executive Committee 2017 - 2018
Science representative

- Co-organized social and educational events.
- Represented all graduate students from the faculty of science on the Acadia Senate Committee on Graduate Studies in matters pertaining to funding allocations, admissions, and thesis defenses.

Acadia Math Outreach 2016 - 2018
Student volunteer

- Facilitated over 10 sessions for participants aged 10-17. Each session was designed to allow participants to explore a particular topic in mathematics.