

Maxence Mayrand

Curriculum Vitae | February 2021

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Employment

University of Toronto | Postdoctoral Fellow 2019–present
Department of Mathematics
Geometric Structures Laboratory
Supervisor: Prof. Marco Gualtieri

University of Oxford | Lecturer in Pure Mathematics 2018–2019
Teaching position at Jesus College (part time).

Education

University of Oxford | DPhil in Mathematics 2015–2019
Supervisor: Prof. Andrew Dancer

McGill University | BSc Honours Mathematics 2012–2015
Mentor: Prof. Niky Kamran

Research interests

Keywords. Complex geometry; Kähler geometry; hyperkähler geometry; Riemannian geometry; geometric quantization; topological quantum field theories; moduli spaces; gauge theory (Higgs bundles, monopoles, Nahm’s equations, Yang–Mills equations); mirror symmetry; deformation theory; holomorphic Poisson geometry; Lie groupoids; Lie theory; integrable systems; moment maps; geometric invariant theory.

Publications and preprints

- [1] Mayrand, M., *Hyperkähler metrics near Lagrangian submanifolds and symplectic groupoids*. [arXiv:2011.09282](https://arxiv.org/abs/2011.09282) (2020)
- [2] Mayrand, M., *Stratified hyperkähler spaces and Nahm’s equations* (PhD thesis). [Oxford University Research Archive](https://www.oxfordjournals.org/doi/10.1093/acprof:oso/9780198800000.003.0001) (2019)
- [3] Mayrand, M., *Kempf–Ness type theorems and Nahm equations*. *Journal of Geometry and Physics*, **136** (2019), 138–155.
- [4] Mayrand, M., *Stratification of singular hyperkähler quotients*. [arXiv:1807.05992](https://arxiv.org/abs/1807.05992) (2018)
- [5] Mayrand, M., *Stratified hyperkähler spaces from semisimple Lie algebras*. *Transformation Groups* (2018).

- [6] Mayrand, M., *Particle motion in monopoles and geodesics on cones*. [Symmetry, Integrability and Geometry: Methods and Applications \(SIGMA\)](#), **10** (2014), 102, 17 pages.

Teaching

University of Toronto

- Introduction to Combinatorics Fall 2020
- Concepts in Abstract Mathematics Winter 2020

Jesus College, University of Oxford

- Group Theory Spring 2019
- Groups and Group Actions Winter and Spring 2019
- Linear Algebra II Winter 2019
- Topology Winter 2019
- Linear Algebra I Fall 2018
- Introduction to University Mathematics Fall 2018
- Introduction to Complex Numbers Fall 2018

Mathematical Institute, University of Oxford

Tutor:

- Lie Algebras Spring 2017
- Lie Algebras Fall 2017

Teaching assistant:

- Commutative Algebra Winter 2018
- Representation Theory of Semisimple Lie Algebras Winter 2017
- Lie Algebras Fall 2016

Mini-courses at the graduate level

- Symplectic Reduction and Geometric Invariant Theory Dec 2020
2020 Canadian Mathematical Society Winter Meeting (3 hours)
- Nahm's Equations Oct 2019
The Fields Institute (6 hours)
- Stratified Hyperkähler Spaces and Nahm's Equations Jul 2018
The Fields Institute (6 hours)

Selected talks

1. *Hyperkähler metrics near Lagrangian submanifolds and symplectic groupoids* 22 Jan 2021
Geometry and Topology Seminar
University of Waterloo
2. *Hyperkähler metrics near Lagrangian submanifolds and symplectic groupoids* 11 Jan 2021
Differential Geometry Research Seminar
University of Hamburg

3. *Hyperkähler realizations of holomorphic Poisson surfaces* 11 Dec 2020
Friday Fish Seminar
Utrecht University
4. *Symplectic reduction along a submanifold and the Moore–Tachikawa TQFT* 3 Sep 2020
Northeastern University
Geometry, Physics, and Representation Theory Seminar
5. *Hyperkähler structures on holomorphic symplectic groupoids* 7 Jun 2020
Workshop on Lie theory and integrable systems in symplectic and
Poisson geometry
6. *Hyperkähler structures on symplectic realizations of
holomorphic Poisson surfaces* 28 May 2020
School on Geometry and Dynamics of Foliations
CIRM
7. *Kempf–Ness type theorems and Nahm’s equations* 7 Dec 2019
2019 Canadian Mathematical Society Winter Meeting
Algebraic Geometry and Representation Theory
Toronto, Canada
8. *Stratified hyperkähler spaces, GIT, and Nahm’s equations* 5 Dec 2019
Boston College
Geometry and Topology Seminar
9. *Symplectic reduction, GIT quotients, and Nahm’s equations* 21 Nov 2019
McMaster University
Geometry and Topology Seminar
10. *Singular hyperkähler reduction and geometric invariant theory* 11 Nov 2019
University of Toronto
Symplectic Geometry Seminar
11. *Symplectic reduction, GIT quotients, and Nahm’s equations* 11 Oct 2019
CIRGET (Centre interuniversitaire de recherches en géométrie et topologie)
Geometry and Topology Seminar
12. *Singular hyperkähler quotients* 16 May 2019
University of Duisburg-Essen, Germany
The Essen Seminar for Algebraic Geometry and Arithmetic
13. *Stratified hyperkähler spaces* 6 Feb 2019
Centre for Quantum Geometry of Moduli Spaces, Aarhus, Denmark
QGM seminars
14. *Hyperkähler quotients and geometric invariant theory* 5 Feb 2019
Centre for Quantum Geometry of Moduli Spaces, Aarhus, Denmark
Introductory seminars
15. *Stratified hyperkähler spaces* 15 Jun 2018
University of Edinburgh
GLEN Algebraic Geometry Seminar
16. *Stratified hyperkähler spaces* 5 Mar 2018
University of Oxford
Geometry and Analysis Seminar

17. *Nahm equations, stratified hyperkähler spaces and the Moore–Tachikawa category.* 30 Mar 2017
 ICTS, Tata Institute of Fundamental Research, Bangalore, India
 ICTS Special Seminar
18. *Nahm equations and stratified hyperkähler spaces* 28 Mar 2017
 Indian Institute of Science, Bangalore, India
 School and Workshop on Geometry and Physics of Moduli Spaces

Scholarships and awards

University of Toronto

- NSERC Postdoctoral Fellowship 2019–2021
- FRQNT Postdoctoral research scholarship 2019–2021

Pacific Institute for the Mathematical Sciences

- PIMS Postdoctoral Fellowship (declined) 2019–2021

University of Oxford

- Moussouris Scholarship 2015–2019
 Full scholarship (tuition fees and living expenses)
 Awarded by the University of Oxford
- NSERC CGS D (declined) 2017–2019
 Alexander Graham Bell Canada Graduate Scholarships
- NSERC PGS D 2017–2019
 Postgraduate Scholarships–Doctoral Program
- FRQNT doctoral scholarship (declined) 2017–2019
- FRQNT master scholarship 2015–2017

McGill University

- Dean’s Honour List May 2015
- First Class Honours in Mathematics May 2015
- Gowrisankaran Prize in Mathematics and Statistics May 2015
- NSERC Undergraduate Student Research Award Summer 2014
- Kamran Undergraduate Award Summer 2013