Maxence Mayrand
Curriculum Vitae | December 2022

email   maxence.mayrand@usherbrooke.ca
webpage   https://maxencemayrand.github.io

Employment

Université de Sherbrooke | Assistant Professor   2022–present
   Département de mathématiques

University of Toronto | Postdoctoral Fellow   2019–2022
   Department of Mathematics, Geometric Structures Laboratory
   Supervisor: Prof. Marco Gualtieri

Education

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

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

Research keywords

Complex geometry; hyperkähler geometry; geometric quantization; Poisson geometry; Lie groupoids; Lie algebras; integrable systems; moment maps; symplectic reduction; geometric invariant theory; singular spaces; moduli spaces; gauge theory; Yang–Mills equation; topological quantum field theories.

Papers

[1] Bălibanu, A., Mayrand, M., *Reduction of Dirac realizations.*
   arXiv:2210.07200

[2] Crooks, P., Mayrand, M., *Symplectic reduction along a submanifold.*
   Compositio Mathematica, **158** (2022), 1878–1934.
   arXiv:2107.03198

[3] Mayrand, M., *Hyperkähler metrics near Lagrangian submanifolds and symplectic groupoids.*
   J. Reine Angew. Math. (Crelle's Journal), **782** (2022), 197–218.
   arXiv:2011.09282

[4] Mayrand, M., *Kempf–Ness type theorems and Nahm equations.*
   Journal of Geometry and Physics, **136** (2019), 138–155.
   arXiv:1809.04518

[5] Mayrand, M., *Stratification of singular hyperkähler quotients.*
Complex Manifolds, **9** (2022), 261–284.
arXiv:1807.05992

[6] Mayrand, M., *Stratified hyperkähler spaces from semisimple Lie algebras.*
Transformation Groups, **25** (2020), 191–215.
arXiv:1709.09126

[7] Mayrand, M., *Particle motion in monopoles and geodesics on cones.*
Symmetry, Integrability and Geometry: Methods and Applications (SIGMA), **10**
(2014), 102, 17 pages.
arXiv:1407.7919

PhD thesis (University of Oxford, 2019)
Stratifed hyperkähler spaces and Nahm's equations
pdf available here

Teaching

Univeristé de Sherbrooke
- Analyse réelle (MAT189)   Winter 2023
- Équations différentielles (MAT528)   Winter 2023

University of Toronto
- Complex Variables (MAT334)   Winter 2022
- Introduction to Combinatorics (MAT344)   Fall 2021
- Introduction to Combinatorics (MAT344)   Fall 2020
- Concepts in Abstract Mathematics (MAT246)   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

Talks

1. *Reduction of Dirac realizations*   4 Jan 2023
   2023 Joint Mathematics Meetings, Boston
   AMS Special Session on Integrable Systems and Symplectic Group Actions
2. *Reduction along a submanifold*   4 Jan 2023
   2023 Joint Mathematics Meetings, Boston
   AMS Special Session on Resolutions of Singularities and
   Cohomology in Geometry and Representation Theory
3. *Twistor constructions of hyperkähler and hypercomplex structures*   3 Dec 2022
   near complex submanifolds
   2022 CMS Winter Meeting, Toronto
   Complex Geometry and Moduli Space
4. *Reduction of Dirac realizations*   17 Nov 2022
   Global Poisson Webinar
5. *Dirac reduction and shifted symplectic geometry*   8 Feb 2022
   SwissMAP Research Station, Les Diablerets
   Differentiable Stacks, Poisson Geometry and related geometric structures
6. *Dirac reduction along a submanifold*   10 Jan 2022
   CIRM, Luminy
   Lie Theory and Poisson Geometry
7. *Symplectic reduction along a submanifold and the Moore-Tachikawa TQFT* 1 May 2021
   AMS Spring Western Sectional Meeting
   Geometric and Categorical Methods in Representation Theory
   American Mathematical Society
8. *Hyperkähler metrics near Lagrangian submanifolds and*   22 Jan 2021
   symplectic groupoids
   Geometry and Topology Seminar
   University of Waterloo
9. *Hyperkähler metrics near Lagrangian submanifolds and*   11 Jan 2021
   symplectic groupoids
   Differential Geometry Research Seminar
   University of Hamburg
10. *Hyperkähler realizations of holomorphic Poisson surfaces*   11 Dec 2020
    Friday Fish Seminar
    Utrecht University
11. *Mini-course on Symplectic Reduction and Geometric Invariant Theory*   3 Dec 2020
    2020 Canadian Mathematical Society Winter Meeting
12. *Symplectic reduction along a submanifold and the Moore–Tachikawa TQFT* 3 Sep 2020
    Northeastern University
    Geometry, Physics, and Representation Theory Seminar
13. *Hyperkähler structures on holomorphic symplectic groupoids*   7 Jun 2020
    Workshop on Lie theory and integrable systems in symplectic and
    Poisson geometry

14. *Hyperkähler structures on symplectic realizations of*   28 May 2020
holomorphic Poisson surfaces
    School on Geometry and Dynamics of Foliations
    CIRM
15. *Kempf-Ness type theorems and Nahm's equations*   7 Dec 2019
    2019 Canadian Mathematical Society Winter Meeting
    Algebraic Geometry and Representation Theory
    Toronto, Canada
16. *Stratified hyperkähler spaces, GIT, and Nahm's equations*   5 Dec 2019
    Boston College
    Geometry and Topology Seminar
17. *Symplectic reduction, GIT quotients, and Nahm's equations*   21 Nov 2019
    McMaster University
    Geometry and Topology Seminar
18. *Singular hyperkähler reduction and geometric invariant theory*   11 Nov 2019
    University of Toronto
    Symplectic Geometry Seminar
19. *Two lectures on Nahm's equations*   30–31 Oct 2019
    The Fields Institute
    Geometric Structures Laboratory Seminar
20. *Symplectic reduction, GIT quotients, and Nahm's equations*   11 Oct 2019
    CIRGET (Centre interuniversitaire de recherches en géométrie et topologie)
    Geometry and Topology Seminar
21. *Singular hyperkähler quotients*   16 May 2019
    University of Duisburg-Essen, Germany
    The Essen Seminar for Algebraic Geometry and Arithmetic
22. *Stratified hyperkähler spaces*   6 Feb 2019
    Centre for Quantum Geometry of Moduli Spaces, Aarhus, Denmark
    QGM seminars
23. *Hyperkähler quotients and geometric invariant theory*   5 Feb 2019
    Centre for Quantum Geometry of Moduli Spaces, Aarhus, Denmark
    Introductory seminars
24. *Nahm's equations, groupoids, and Higgs bundles*   25 Jul 2018
(Part II of a mini-course on my thesis work)
    The Fields Institute
    Geometric Structures Laboratory Seminar
25. *Stratified hyperkähler spaces and Nahm's equations*   24 Jul 2018
(Part I of a mini-course on my thesis work)
    The Fields Institute
    Geometric Structures Laboratory Seminar
26. *Stratified hyperkähler spaces*   15 Jun 2018
    University of Edinburgh
    GLEN Algebraic Geometry Seminar
27. *Stratified hyperkähler spaces*   5 Mar 2018
    University of Oxford

Geometry and Analysis Seminar
28. *Nahm equations, stratified hyperkähler spaces and the Moore–Tachikawa*   30 Mar 2017
    category.
        ICTS, Tata Institute of Fundamental Research, Bangalore, India
        ICTS Special Seminar
29. *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
- F. V. Atkinson Teaching Award   June 2021
- 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