Spiro Karigiannis   CV 2025

Contact Information

- **Address:** Department of Pure Mathematics, University of Waterloo
  200 University Avenue West, Waterloo, Ontario, N2L 3G1, CANADA
- **Email:** karigiannis@uwaterloo.ca
- **Website:** <http://www.math.uwaterloo.ca/~karigiannis>

Academic Positions

- **University of Waterloo**, Professor, July 2021 – onwards
- **University of Waterloo**, Associate Professor, July 2013 – June 2021
- **University of Waterloo**, Assistant Professor, July 2008 – June 2013
- **University of Oxford**, Marie Curie Incoming International Fellow, Aug 2007 – Dec 2008
- **Mathematical Sciences Research Institute**, Postdoctoral Fellow, 2006 – 2007
- **Michigan State University**, Visiting Research Instructor, 2005 – 2006
- **McMaster University**, NSERC Postdoctoral Research Fellow, 2003 – 2005

Other Academic Affiliations

- **Wilfrid Laurier University**, Associate Member of the Graduate Faculty, Jul 2023 – Jun 2027
- **Western University**, Adjunct Professor, Jul 2015 – Dec 2016
- **Perimeter Institute for Theoretical Physics**, Affiliate Member, Mar 2011 – Dec 2026

Invited Short-Term Visits

- **Centre de Recherches Mathématiques, Université de Montréal**, CRM-Simons Professor, Mar–Apr, 2024
- **Center of Mathematical Sciences and Applications, Harvard University**, Visitor, Sep–Dec, 2019
- **Fields Institute**, Fields Research Fellow, Aug–Dec, 2017
- **McGill University**, Visiting Professor, Jul–Dec, 2015
- **Simons Center for Geometry and Physics**, Visitor, 17/Aug–06/Sep, 2014
- **Hong Kong University**, Visiting Research Fellow, 09/Dec–30/Dec, 2012
- **Columbia University**, Visiting Professor, Sep–Nov, 2012
- **University of Cyprus**, Visitor, 04/Feb–08/Feb, 2008
- **Institute of Mathematical Sciences, Chinese University of Hong Kong**, Visiting Scholar, May 2006
- **Mathematical Sciences Research Institute**, Invited Member, Nov 2005
- **Institute of Mathematical Sciences, Chinese University of Hong Kong**, Visiting Scholar, Oct 2004

Other Academic Employment

- **McGill University**. Course Instructor, Summer Session, Jul–Aug 2006 and Jul–Aug 2007

Academic Degrees

- **Harvard University**, Ph.D., June 2003, Supervisor: *Shing-Tung Yau*
  Thesis: *Deformations of* G_2 *and* $\mathrm{Spin}(7)$ *Structures on Manifolds*
- **Harvard University**, A.M., *Mathematics*; June 1998
- **McGill University**, B.Sc., *Honours in Mathematics and Honours in Physics*; June 1997

Research Grants

- *NSERC Discovery Grant:* \$225,000; Apr 2025 – Mar 2030;
  "Special holonomy Riemannian manifolds and their calibrated submanifolds, instanton connections, and energy-minimizing harmonic maps"
- *NSERC Discovery Grant:* \$129,360; Apr 2019 – Mar 2025;
  "Geometric analysis of special structures in high dimensions inspired from physics; including singularities, torsion, and geometric evolution"
- *NSERC Discovery Grant:* \$70,000; Apr 2014 – Mar 2019;
  "Exceptional geometric structures required for string theory and M-theory: moduli spaces and formation of singularities"
- *NSERC Discovery Grant:* \$105,000; Apr 2009 – Mar 2014;
  "Differential geometry of manifolds with special holonomy and their calibrated submanifolds"
- *University of Waterloo Start-Up Research Grant:* \$30,000; awarded in 2008

Research Interests

- My area of research is differential geometry and geometric analysis. More specifically, I study manifolds with $U(m)$, $SU(m)$, G_2, or $Spin(7)$ structures. This includes: the construction of torsion-free compact examples; the study of their moduli spaces and the extra geometric structures on such moduli spaces; conical singularities of such manifolds; calibrated submanifolds; Donaldson-Thomas connections in G_2 and $Spin(7)$ geometry; properties of special torsion classes; and geometric evolution equations in the context of special holonomy and calibrations.

Research Publications and Preprints   Click here to view papers online

[34] S. Karigiannis and J. Loftin; "Octonionic-algebraic structure and curvature of the Teichmüller space of G_2 manifolds"; *in preparation*.

[33] X. de la Ossa, S. Karigiannis, and E. E. Svanes, "Geometry of general $U(m)$-structures: Kähler identities, the dd^c lemma, and Hodge theory"; *in preparation*.

[32] S. Karigiannis, S. Picard, and C. Suan, "Flows of conformally coclosed G_2-structures with dilaton"; *submitted for publication*, 35 pages.

[31] K. Dineen and S. Karigiannis; "Non-squeezing and capacities for some calibrated geometries"; *submitted for publication*, 31 pages.

[30] D. R. Cheng, S. Karigiannis, and J. Madnick; "Holomorphicity of parabolic stable minimal surfaces of high codimension"; *submitted for publication*, 16 pages.

[29] M. Albanese, S. Karigiannis, L. Martín-Merchán, and A. Milivojević, "Hodge theoretic results for nearly Kähler manifolds in all dimensions"; *submitted for publication*, 15 pages.

[28] S. Karigiannis, "BRIDGES Lectures: Flows of geometric structures, especially G_2-structures"; *to appear in a forthcoming book*, 52 pages.

[27] T. A. Ivey and S. Karigiannis, "Cohomogeneity one solitons for the isometric flow of G_2-structures"; *Geometriae Dedicata* **218** (2024), 102, 35pp.

[26] A. Iliashenko and S. Karigiannis, "A special class of k-harmonic maps inducing calibrated fibrations"; *Mathematical Research Letters*, to appear.

[25] S. Dwivedi, P. Gianniotis, and S. Karigiannis; "Flows of G_2-structures, II: Curvature, torsion, symbols, and functionals"; *Pure and Applied Mathematics Quarterly*, **21** (2025), 2035–2186.

[24] S. Karigiannis and L. Martín-Merchán; "Extrinsic geometry of calibrated submanifolds"; *Mathematische Zeitschrift* **307** (2024), 33, 26pp.

[23] B. Aslan, S. Karigiannis, and J. Madnick; "Calibrated geometry in hyperKähler cones, 3-Sasakian manifolds, and twistor spaces"; *Canadian Journal of Mathematics* **77** (2025), 1163–1221.

[22] M. Chemtov and S. Karigiannis; "Observations about the Lie algebra $\mathfrak{g}_2 \subseteq \mathfrak{so}(7)$, associative 3-planes, and $\mathfrak{so}(4)$ subalgebras"; *Expositiones Mathematicae* **40** (2022), 845–869.

[21] D. R. Cheng, S. Karigiannis, and J. Madnick; "A variational characterization of calibrated submanifolds"; *Calculus of Variations and Partial Differential Equations* **62** (2023), 174, 38pp.

[20] T. A. Ivey and S. Karigiannis; "Twisted-Austere Submanifolds in Euclidean Space"; *Symmetry, Integrability and Geometry: Methods and Applications* **17** (2021), 023, 31pp.

[19] S. Karigiannis and J. Lotay; "Bryant–Salamon G_2 manifolds and coassociative fibrations"; *Journal of Geometry and Physics* **162** (2021), 104074, 60pp.

[18] S. Karigiannis; "Introduction to G_2 geometry"; *Lectures and Surveys on G_2 manifolds and related topics* (Fields Institute Communications Volume 84), (2020), 3–50.

[17] D. R. Cheng, S. Karigiannis, and J. Madnick; "Bubble tree convergence of conformally cross product preserving maps"; *Asian Journal of Mathematics*, **24** (2020), 903–984.

[16] S. Dwivedi, P. Gianniotis, and S. Karigiannis; "A gradient flow of isometric G_2-structures"; *The Journal of Geometric Analysis*, **31** (2021), 1855–1933.

[15] K. F. Chan, S. Karigiannis, and C. C. Tsang; "The $\mathcal{L}_B$-cohomology on compact torsion-free G_2 manifolds and an application to 'almost' formality"; *Annals of Global Analysis and Geometry* **55** (2019), 325–369.

[14] K. F. Chan, S. Karigiannis, and C. C. Tsang; "Cohomologies on almost complex manifolds and the $\partial\bar{\partial}$-lemma"; *Asian Journal of Mathematics* **23** (2019), 561–584.

[13] D. Joyce and S. Karigiannis; "A new construction of compact torsion-free G_2 manifolds by gluing families of Eguchi–Hanson spaces"; *Journal of Differential Geometry* **117** (2021), 255–343.

[12] S. Karigiannis and J. Lotay; "Deformation theory of G_2 conifolds"; *Communications in Analysis and Geometry* **28** (2020), 1057–1210.

[11] S. Karigiannis and C. H. Leung; "Deformations of calibrated subbundles of Euclidean spaces via twisting by special sections"; *Annals of Global Analysis and Geometry* **42** (2012), 371–389.

[10] S. Karigiannis, B. McKay, and M.-P. Tsui; "Soliton solutions for the Laplacian coflow of some G_2-structures with symmetry"; *Differential Geometry and its Applications* **30** (2012), 318–333.

[9] S. Karigiannis; "What is a G_2-manifold?"; *Notices of the American Mathematical Society* **58** (2011), 580–581.

[8] S. Karigiannis; "Desingularization of G_2 manifolds with isolated conical singularities"; *Geometry and Topology* **13** (2009), 1583–1655.

[7] S. Karigiannis; "Flows of Spin(7)-structures"; *Proceedings of the 10th International Conference on Differential Geometry and its Applications: DGA 2007*; World Scientific Publishing, (2008), 263–277.

[6] S. Karigiannis and N. C. Leung; "Hodge theory for G_2 manifolds: Intermediate Jacobians and Abel-Jacobi maps"; *Proceedings of the London Mathematical Society (3)* **99** (2009), 297–325.

[5] S. Karigiannis; "Flows of G_2-structures, I."; *Quarterly Journal of Mathematics* **60** (2009), 487–522.

[4] S. Karigiannis; "Some Notes on G_2 and Spin(7) Geometry"; *Recent Advances in Geometric Analysis*; Advanced Lectures in Mathematics, Vol. 11; International Press, (2010), 129–146.

[3] S. Karigiannis and M. Min-Oo; "Calibrated sub-bundles in noncompact manifolds with special holonomy"; *Annals of Global Analysis and Geometry* **28** (2005), 371–394.

[2] M. Ionel, S. Karigiannis, and M. Min-Oo; "Bundle constructions of calibrated submanifolds in $\mathbb{R}^7$ and $\mathbb{R}^8$"; *Mathematical Research Letters* **12** (2005), 493–512.

[1] S. Karigiannis; "Deformations of G_2 and Spin(7) structures"; *Canadian Journal of Mathematics* **57** (2005), 1012–1055.

Books

[1] S. Karigiannis, N.C. Leung, and J.D. Lotay (editors); **Lectures and Surveys on G_2-manifolds and Related Topics** (*Fields Institute Communications Volume 84*); Springer Nature; 2020.

Training of Highly Qualified Personnel $\qquad$ Click here for more details on students

PDF (Postdoctoral Fellows)

[18] Viktor Majewski (PhD Humboldt-Berlin); 2026–2027

[17] Jesse Huang (PhD Urbana-Champaign); 2024–2026

[16] Roberto Albesiano (PhD Stony Brook); 2024–2026

[15] Aleksandar Milivojevic (PhD Stony Brook); 2023–2026; William T. Tutte Postdoc

[14] Lucía Martín-Merchán (PhD Universidad de Málaga); 2022–2024; (*Postdoc at Humböldt–Berlin*)

[13] Michael Albanese (PhD Stony Brook); 2022–2024; (*Lecturer at the University of Adelaide*)

[12] Da Rong (Daren) Cheng (PhD Stanford University); 2020–2022; (*Assis. Prof, U. of Miami*)

[11] Andrew Staal (PhD Queen's University); 2019–2021

[10] Ali Aleyasin (PhD Stony Brook); 2017–2019

[9] Michael Bailey (PhD Toronto); 2017–2018

[8] Panagiotis Gianniotis (PhD Stony Brook); 2016–2017; Fields-Ontario Postdoc (*Assis. Prof, U. of Athens*)

[7] Ákos Nagy (PhD Michigan State); 2016–2017

[6] Steven Gindi (PhD Stony Brook); 2014–2016

[5] Reza Seyyedali (PhD Johns Hopkins); 2012–2015

[4] Yunxia Chen (PhD Chinese U of Hong Kong); 2013

[3] Aaron Smith (PhD U Pennsylvania); 2011–2013

[2] Ken Chan (PhD Stanford); 2010–2012

[1] Shengda Hu (PhD UW Madison); 2009–2011; (*Professor, Wilfrid Laurier University*)

PhD (Doctor of Philosophy) students[1]

[7] Faisal Romshoo; 2024/09/01–2028/08/31 (*in progress*)

[6] Amanda Petcu; 2022/01/01–2026/04/30 (*in progress*)

[5] Anton Iliashenko; 2020/09/01–2024/08/31 (*Postdoc at BIMSA in Beijing*)

[4] Ragini Singhal[4]; 2017/09/01–2021/08/31 (*Postdoc at Münster*)

[3] Shubham Dwivedi; 2015/09/01–2020/04/30 (*W1 Junior Professor at Hamburg*)

[2] Jonathan Herman[3]; 2014/09/01–2018/06/30 (*Assistant Professor Teaching Stream at University of Toronto*)

[1] Josue Rosario-Ortega[2]; 2012/09/01–2016/08/31 (*Working in industry: operations research*)

    [1] granted ADDS (*Approved Doctoral Dissertation Supervisor*) status by University of Waterloo in 2013

    [2] PhD student at the University of Western Ontario, co-supervised with Tatyana Barron

    [3] co-supervised with Shengda Hu (Wilfrid Laurier University).

    [4] co-supervised with Benoit Charbonneau.

MMath (Master of Mathematics) students – (THESIS) indicates MMath thesis option

[19] Spencer Kelly; 2025/09/01–2026/08/31 (*in progress*)

[18] Justin Fus; 2024/09/01–2025/08/31

[17] Kain Dineen; 2024/09/01–2025/08/31

[16] Faisal Romshoo; 2023/09/01–2024/08/31 (THESIS)

[15] Jing Xuan Chen; 2022/09/01–2023/08/31

[14] Jacques Van Wyk; 2022/09/01–2023/08/31

[13] Timothy Ponepal[3]; 2022/09/01–2024/08/31

[12] Hanming Liu; 2022/09/01–2023/08/31

[11] Nicholas Kayban; 2020/09/01–2021/08/31

[10] Caleb Suan; 2020/01/01–2020/12/31 (THESIS)

[9] Anton Iliashenko; 2019/09/01–2020/08/31

[8] Anthony McCormick; 2016/09/01–2017/08/31 (THESIS)

[7] Rui Philip Xiao[2]; 2014/01/01–2015/04/30 (THESIS)

[6] Jonathan Herman; 2013/09/01–2014/08/31

[5] Janis Lazovskis[1]; 2013/09/01–2014/08/31

[4] David Pazmino-Pullas; 2012/09/01–2013/08/31

[3] Adam Bognat; 2010/09/01–2011/12/31

[2] Chun Ho Nat Leung; 2010/09/01–2011/08/31 (THESIS)

[1] Thea Gegenberg; 2009/09/01–2010/12/31

    [1] co-supervised with Benoit Charbonneau.

    [2] co-supervised with Ken Davidson.

    [3] M.Sc. degree at Wilfrid Laurier University, co-supervised with Shengda Hu and Michael Albanese .

Undergraduate student research assistants – (NSERC) indicates NSERC USRA student

[20] Alexander Pawelko[3]; 2025/09/01–2025/12/31

[19] Zev Friedman; 2024/09/01–2024/12/31

[18] Alexander Pawelko; 2024/05/01–2024/08/31 (NSERC)

[17] Paul McAuley; 2022/05/01–2022/08/31 (NSERC)

[16] Max Chemtov; 2021/05/01–2021/08/31 (NSERC)

[15] Ying Kit Hui; 2020/06/15–2020/08/31

[14] Shun Zhang; 2020/05/01–2020/08/31

[13] Anton Iliashenko[2]; 2019/05/01–2019/08/31 (NSERC)

[12] Ki Fung Chan; 2017/05/15–2017/08/15

[11] Chi Cheuk Tsang; 2017/05/01–2017/08/15

[10] Anthony McCormick; 2016/05/01–2016/08/31 (NSERC)

 [9] Xinle Clair Dai[1]; 2016/01/01–2016/04/30

 [8] Ningyuan Wang; 2014/06/01–2014/08/10

 [7] Justin Shaw; 2014/05/01–2014/08/31 (NSERC)

 [6] Saifuddin Syed; 2013/05/01–2013/08/31 (NSERC)

 [5] Li Chen; 2012/05/01–2012/08/31 (NSERC)

 [4] Li Chen; 2011/05/01–2011/08/31 (NSERC)

 [3] Zachary Drudi; 2010/05/01–2010/08/31 (NSERC)

 [2] Ho Yeung Hung; 2009/05/15–2009/08/30

 [1] Chun Ho Nat Leung; 2009/05/15 –2009/08/30

 [1] co-supervised with Shengda Hu (Wilfrid Laurier University).

 [2] co-supervised with Shubham Dwivedi.

 [3] co-supervised with Xuemiao Chen.

Teaching Experience   Click here to see course materials

University of Waterloo; 2016–onwards

[70] PMATH 990: *Topics in Pure Mathematics: Elliptic Methods in Geometric Analysis*; Fall 2026

[69] PMATH 868: *Connections and Riemannian Geometry*; Winter 2026

[68] PMATH 365: *Differential Geometry*; Winter 2026

[67] PMATH 336: *Introduction to Group Theory with Applications*; Fall 2025

[66] PMATH 965: *Topics in Geometry and Topology: Harmonic Maps*; Winter 2025

[65] MATH 146: *Linear Algebra 1 (Advanced Level)*; Winter 2025

[64] PMATH 333: *Introduction to Real Analysis*; Fall 2023

[63] MATH 247: *Calculus 3 (Advanced Level)*; Fall 2023

[62] PMATH 868: *Connections and Riemannian Geometry*; Winter 2023

[61] PMATH 965: *Topics in Geometry and Topology: A Second Course in Riemannian Geometry*; Fall 2022

[60] MATH 247: *Calculus 3 (Advanced Level)*; Fall 2022

[59] PMATH 868: *Connections and Riemannian Geometry*; Winter 2022

[58] PMATH 352: *Complex Analysis*; Winter 2022

[57] PMATH 465/665: *Smooth Manifolds*; Fall 2021

[56] PMATH 868: *Connections and Riemannian Geometry*; Winter 2021

[55] PMATH 945: *Topics in Algebra: Clifford Algebras, Spinors, and Calibrations*; Fall 2020

[54] PMATH 465/665: *Smooth Manifolds*; Fall 2020

[53] PMATH 365: *Differential Geometry*; Winter 2020

[52] PMATH 352: *Complex Analysis*; Winter 2020

[51] PMATH 365: *Differential Geometry*; Winter 2019

[50] PMATH 965: *Topics in Geometry and Topology: Special Riemannian Structures*; Winter 2019

[49] PMATH 499: *Introduction to Twistor Theory (Reading Course)*; Fall 2018

[48] MATH 237: *Calculus 3 (Honours Math)*; **Course Coordinator**; Spring 2018

[47] MATH 245: *Linear Algebra 2 (Advanced Level)*; Spring 2018

[46] MATH 237: *Calculus 3 (Honours Math)*; **Course Coordinator**; Winter 2018

[45] MATH 247: *Calculus 3 (Advanced Level)*; Winter 2018

[44] PMATH 950: *Topics in Analysis: Differential Analysis*; Winter 2017

[43] PMATH 690: *Kähler Geometry (Reading Course)*; Fall 2016

[42] PMATH 465/665: *Geometry of Manifolds*; Fall 2016

[41] MATH 237: *Calculus 3 (Honours Math)*; Fall 2016

[40] PMATH 332 / AMATH 332: *Applied Complex Analysis*; Winter 2016

[39] MATH 247: *Calculus 3 (Advanced Level)*; Winter 2016

McGill University; 2015

[38] MATH 706: *Advanced Topics in Geometry and Topology 1:* G_2 *manifolds*; Fall 2015

University of Waterloo; 2013–2015

[37] PMATH 763: *Introduction to Lie Groups and Lie Algebras*; Winter 2015

[36] MATH 247: *Calculus 3 (Advanced Level)*; Winter 2015

[35] PMATH 955: *Topics in Geometry: The Atiyah–Singer Index Theorem*; Winter 2014

[34] PMATH 465/665: *Riemannian Geometry*; Fall 2013

[33] PMATH 499: *Kähler Geometry (Reading Course)*; Spring 2013

[32] PMATH 365: *Smooth Manifolds*; Winter 2013

[31] MATH 146: *Linear Algebra 1 (Advanced Level)*; Winter 2013

Columbia University; 2012

[30] MATH G6273: *Special holonomy and calibrations*; Fall 2012

University of Waterloo; 2009–2012

[29] PMATH 900: *Topics in Algebra: Special Algebraic Structures*; Winter 2012

[28] MATH 146: *Linear Algebra 1 (Advanced Level)*; Winter 2012

[27] MATH 237: *Calculus 3 (Honours Math)*; Fall 2011

[26] PMATH 499: *Variational Methods in Riemannian Geometry (Reading Course)*; Spring 2011

[25] PMATH 955: *Topics in Geometry: Complex and Kähler Manifolds*; Winter 2011

[24] PMATH 365 / AMATH 333: *Elementary Differential Geometry*; Winter 2011

[23] PMATH 465 / AMATH 433 / PMATH 665: *Differential Geometry*; Winter 2010

[22] PMATH 690: *Smooth Methods in Algebraic Topology (Reading Course)*; Fall 2009

[21] MATH 247: *Calculus 3 (Advanced Level)*; Fall 2009

[20] MATH 235: *Linear Algebra 2 (Honours Math)*; Fall 2009

[19] PMATH 365 / AMATH 333: *Elementary Differential Geometry*; Winter 2009

McGill University; 2006–2007

[18] MATH 348: *Topics in Geometry*; Summer 2007

[17] MATH 348: *Topics in Geometry*; Summer 2006

Michigan State University; 2005–2006

[16] Math 432-2: *Axiomatic Geometry*; Spring 2006

[15] Math 132-1: *Calculus I*; Spring 2006

[14] Math 132-19: *Calculus I*; Fall 2005

[13] Math 132-2: *Calculus I*; Fall 2005

McMaster University; 2003–2005

[12] Math 764: *Holonomy and Calibrations*; Winter 2005

[11] Math 2Q04: *Advanced Calculus for Engineering*; Winter 2004

Harvard University; 1997–2003

[10] Math 21b: *Linear Algebra and Differential Equations*; Spring 2003

 [9] Tutorial: *Quantum Mechanics for the Masses and the Massless*; Spring 2003

 [8] Math 21a: *Multivariable Calculus (Physics Section)*; Fall 2002

 [7] Math 21a: *Multivariable Calculus (Regular Section)*; Spring 2002

 [6] Math 21a: *Multivariable Calculus (Physics Section)*; Spring 2002

 [5] Math 21b: *Linear Algebra and Differential Equations*; Fall 2001

 [4] Math 21a: *Multivariable Calculus (Physics Section)*; Fall 2000

 [3] Tutorial: *Geometry of Spacetime*; Summer 2000

 [2] Tutorial: *Geometry and Gauge Theory*; Spring 2000

 [1] Math 21a: *Multivariable Calculus (Physics Section)*; Fall 1999

Academic Service

Editorial Boards

- Editor, *Pure and Applied Mathematics Quarterly* (International Press); 2019–onwards

Conference, Workshop, and Special Program Co-Organization

- Special Session, Mathematical Congress of the Americas 2025: *Special Geometries and Gauge Theory*; University of Miami, July 2025; (with R.M. Arroyo, D.R. Cheng, and H. Sá Earp)
- *Fields Institute Geometric Analysis Colloquium, 2024–2025*; 7/2024–4/2025; (with S. Alexakis, T. Collins, R. Haslhofer, S. Lu, Y. Liokumovich, and M. Wang)
- *Séminaire de Mathématiques Supérieures 2024: Flows and Variational Methods in Riemannian and Complex Geometry: Classical and Modern Methods*; Centre de Recherches Mathématiques; 03/06/2024–14/06/2024; (with V. Apostolov, E. Di Nezza, P. Guan, J. Keller, A. Stancu, and V. Tosatti)
- *Special Riemannian geometries in dimensions 6,7,8*; Centre de Recherches Mathématiques; 22/04/2024–26/04/2024; (with X. de la Ossa, J. Lotay, S. Picard, and R. Singhal)
- *Special Thematic Program on Geometric Analysis*; Centre de Recherches Mathématiques; 04/2024–06/2024; (with V. Apostolov, A. Fraser, P. Guan, J. Hurtubise, J. Keller, F. Rochon, N. Sesum, V. Tosatti, J. Vétois)
- *Fields Institute Geometric Analysis Colloquium, 2023–2024*; 7/2023–4/2024; (with S. Alexakis, T. Collins, R. Haslhofer, S. Lu, Y. Liokumovich, and M. Wang)
- *Spinorial and Octonionic Aspects of* G_2 *and* $\mathrm{Spin}(7)$ *Geometry*; Banff International Research Station; 28/05/2023–02/06/2023; (with I. Agricola, S. Dwivedi, S. Grigorian, and J. Lotay)
- *Fields Institute Geometric Analysis Colloquium, 2022–2023*; 7/2022–4/2023; (with S. Alexakis, X. Chen, R. Haslhofer, S. Lu, Y. Liokumovich, and M. Wang)
- *Special Geometries on Riemannian Manifolds*; Centre de Recherches Mathématiques; 11/10/2021–15/10/2021; (with V. Apostolov, I. Agricola, R. Bryant, and M. Wang)
- *Fields Institute Geometric Analysis Colloquium, 2021–2022*; 7/2021–4/2022; (with S. Alexakis, R. Haslhofer, S. Lu, Y. Liokumovich, and M. Wang)
- *Fields Institute Geometric Analysis Colloquium, 2020–2021*; 7/2020–4/2021; (with S. Alexakis, R. Haslhofer, S. Lu, Y. Liokumovich, and M. Wang)
- G_2 *Geometry and Related Topics*; Casa Matemática Oaxaca; 05/05/2019–10/05/2019; (with N.C. Leung and J. Lotay)
- *Fields Institute Geometric Analysis Colloquium, 2019–2020*; 7/2017–4/2018; (with S. Alexakis, R. Haslhofer, S. Lu, Y. Liokumovich, and M. Wang)
- *Fields Institute Geometric Analysis Colloquium, 2018–2019*; 7/2017–4/2018; (with S. Alexakis, W. Craig, R. Haslhofer, and M. Wang)
- Special Session, CMS Winter Meeting: *Geometric Analysis*; University of Waterloo, 08/12/2017–11/12/2017; (with B. Charbonneau)
- *GAP 2017: Curvature Flows in Complex Geometry*; Fields Institute for Research in Mathematical Sciences; 04/12/2017–06/12/2017; (with M. Gualtieri, R. Moraru, and M. Wang)
- *Workshop on* G_2*-manifolds*; Fields Institute; 21/08/2017–25/08/2017; (with N.C. Leung and J. Lotay)
- *Minischool on* G_2*-manifolds*; Fields Institute; 19/08/2017–20/08/2017; (with N.C. Leung and J. Lotay)
- *Major Thematic Program on Geometric Analysis*; Fields Institute; 07/2017–12/2017; (with S. Alexakis, W. Craig, R. Haslhofer, A. Naber, and M. Wang)
- *Fields Institute Geometric Analysis Colloquium, 2017–2018*; 7/2017–4/2018; (with S. Alexakis, W. Craig, R. Haslhofer, and M. Wang)
- *Fields Institute Geometric Analysis Colloquium, 2016–2017*; 9/2016, 11/2016, 3/2017, 3/2017; (with S. Alexakis, W. Craig, R. Haslhofer, and M. Wang)
- *Fields Institute Geometric Analysis Colloquium, 2015–2016*; 10/2015, 3/2016; (with S. Alexakis, W. Craig, R. Haslhofer, and M. Wang)

- Special Session, CMS Winter Meeting: *Differential Geometry*; McMaster University, 05/12/2014–08/12/2014; (with B. Charbonneau and M. Wang)
- *Fields Institute Geometric Analysis Colloquium, 2014–2015*; 10/2014, 5/2015; (with S. Alexakis, W. Craig, and M. Wang)
- Geometry and Physics: GAP 2014; Pacific Institute for the Mathematical Sciences; 29/05/2014–31/05/2014; (with C. Doran, M. Gualtieri, R. Moraru, T. Hübsch, and M. Wang)
- *Fields Institute Geometric Analysis Colloquium, 2013–2014*; 09/2013–04/2014; (with S. Alexakis, W. Craig, and M. Wang)
- Geometry and Physics: GAP 2013; Centre de Recherches Mathématiques; 30/05/2013–01/06/2013; (with M. Gualtieri, R. Moraru, J. Walcher, and M. Wang)
- Geometry and Physics: GAP 2012; University of Waterloo and Perimeter Institute for Theoretical Physics; 05/05/2012–07/05/2012; (with M. Gualtieri, R. Moraru, R. Myers, P. Vieira, and M. Wang)
- *Manifolds with Special Holonomy and their Calibrated Submanifolds and Connections*; Banff International Research Station; 29/04/2012–04/05/2012; (with B. Acharya, R. L. Bryant, and N.C. Leung)
- Special Session, CMS Winter Meeting: *Differential Geometry*; Ryerson University and York University, 10/12/2011–12/12/2011; (with B. Charbonneau)
- Geometry and Physics: GAP 2011; Fields Institute for Research in Mathematical Sciences; 13/05/2011–15/05/2011; (with M. Gualtieri, R. Moraru, R. Myers, and M. Wang)
- Geometry and Physics: GAP 2010; Perimeter Institute for Theoretical Physics; 07/05/2010–09/05/2010; (with J. Gomis, M. Gualtieri, R. Moraru, R. Myers, and M. Wang)
- Geometry and Physics: GAP 2009; Perimeter Institute for Theoretical Physics; 08/05/2009–10/05/2009; (with M. Gualtieri, R. Moraru, and M. Wang)
- *Special Structures in Riemannian Geometry*; Banff International Research Station; 17/02/2008–22/02/2008; (with G. Craig, N.C. Leung, M. Min-Oo, and S.-T. Yau)
- Special Session, CMS Winter Meeting: *Special Structures in Differential Geometry*; McGill University, 11/12/2004–13/12/2004; (with G. Craig)

Internal Service for the University of Waterloo

- Member of the *Nominating Committee for Chair of the Department of Pure Mathematics*; 2025
- Internal Support Person for the *Academic Program Review Site Visit*, for Psychology + Applied Psychology + Developmental and Communication Science; 2025
- Member of the *Tenure and Promotion Committee* for the Dept of Pure Mathematics; 2025–2028
- Member of the *Qualifying Exam Committee* for the Dept of Pure Mathematics; 2025–2027
- Representative from the Faculty of Mathematics on the *Environment Faculty Council*; 2025–2028
- Member of the *Math Faculty Honorary Degrees Committee*; 2023
- Member of the *Undergraduate Committee* of the Department of Pure Mathematics; 2022–2025
- Member of the *Dean's Advisory Committee on Appointments* for the Dept of Pure Mathematics; 2021–2024
- Member of the *Nominating Committee for Chair of the Department of Pure Mathematics*; 2021
- Member of the *UW-India Committee*, as Representative for the Faculty of Mathematics to the *Shastri Indo-Canadian Institute*; 2020–onwards
- *Colloquium Chair* for the Department of Pure Mathematics; 2020–2025
- Member of the *Student Awards Committee* for the Department of Pure Mathematics; 2019–2022
- Member of the *Graduate Admissions Subcommittee* for the Department of Pure Mathematics; 2018–2021
- Member of the *Senate Finance Committee* for the University; 2017–2019
- Member of the *Student Awards Committee* for the Department of Pure Mathematics; 2016–2018
- Member of the PhD Thesis Examination Chair pool; 2016–2018

- University Senate; *Faculty-at-Large Representative*; 2016–2019
- *Associate Chair of Graduate Studies* for the Department of Pure Mathematics; 2013–2015
- Member of the *Executive Committee* of the Department of Pure Mathematics; 2013–2015
- Member of the *Scholarship Committee* of the Department of Pure Mathematics; 2013–2014
- Member of *ad hoc subcommittee* for revision of the Geometry/Topology sequence of courses; 2011–2019
- Member of the *Nominating Committee for Chair of the Department of Pure Mathematics*; 2011
- *Colloquium Chair* for the Department of Pure Mathematics; Fall 2011
- Member of the *Math Faculty Graduate Studies Committee*; 2010–2015
- Member of the *Graduate Committee* of the Department of Pure Mathematics; 2009–2012

Thesis Committee Memberships

- Bartosz Syroka; *PhD at McGill University*; 2025; **external thesis examiner**.
- Jacques Van Wyk; *PhD in Pure Mathematics*; 2024–onwards; advisory committee member.
- Thibault Langlais; *DPhil at University of Oxford*; 2024; confirmation of status (viva) assessor.
- Paul Cusson; *PhD in Pure Mathematics*; 2023–onwards; advisory committee member.
- Francisco Villacis; *MMath Research Essay in Pure Mathematics*; 2022; second reader.
- Nicholas Spencer Whitehead; *MMath Thesis in Pure Mathematics*; 2022; second reader.
- Lucía Martín-Merchán; *PhD at Universidad de Málaga*; 2021–2022; **external thesis examiner**.
- Hanzhe Chen; *PhD in Applied Mathematics*; 2021; internal-external thesis defence examiner.
- Jason d'Eon; *MMath Research Essay in Pure Mathematics*; 2019; second reader.
- Eric Boulter; *PhD in Pure Mathematics*; 2019–2023; advisory committee member, and member of thesis defence committee.
- Xiao-Bo Li; *PhD in Computer Science*; 2018; internal-external thesis defence examiner.
- David Svoboda; *PhD student in Physics/Perimeter*; 2016–2020; advisory committee member, and internal-external thesis defence examiner.
- Hanci Chi; *MMath Research Essay in Pure Mathematics*; 2015; second reader.
- Mikhail Panine; *PhD student in Applied Mathematics*; 2014–2017; advisory committee member; and internal-external thesis defence examiner.
- Jordan Hamilton; *PhD in Pure Mathematics*; 2014; member of thesis defence committee.
- Krishan Rajaratnam; *MMath Thesis in Applied Mathematics*; 2014; member of thesis defence committee.
- Jingyu Ma; *Master's thesis in mathematics at Wilfrid Laurier University*; 2013; external member of thesis defence examining committee.
- Tianheng Wang; *PhD student in Physics/Perimeter*; 2012–2014; advisory committee member (withdrew).
- João Caetano; *PhD student in Physics/Perimeter*; 2012–2015; advisory committee member; and internal-external thesis defence examiner.
- Nikita Nikolaev; *MMath Research Essay in Pure Mathematics*; 2011; second reader.
- Faisal Al-Faisal; *MMath Thesis in Pure Mathematics*; 2010; second reader.
- Mukto Akash; *MMath Research Essay in Pure Mathematics*; 2010; second reader.
- Matthew Stephen Calder; *PhD in Applied Mathematics*; 2009; internal-external thesis defence examiner.
- Benjamin Smith; *MMath Thesis in Pure Mathematics*; 2009; second reader.

Service for the Canadian Mathematical Community

- Director–Ontario; *Board of Directors* of the Canadian Mathematical Society; 07/2021–06/2025
- Member; ad-hoc Committee on coordination of some Ontario graduate courses by the Fields Institute; 2020
- Member of the Corporation; *Fields Institute for Research in Mathematical Sciences*; 2019–onwards

- Member of the *Electronic Services Committee* of the Canadian Mathematical Society; 01/2011–12/2013

Reviewing and Refereeing Activities

- Research Output Evaluator; *Czech Academy of Sciences*; 2025
- Nomination Committee; *Frontiers of Science Award* (Section: Geometric Analysis); 2025
- Reviewer; *NSERC Discovery Grant research proposal* (2*x*); 2023
- Reviewer; Fellowship proposal for *Fonds de la Recherche Scientifique - FNRS, Belgium*; 2023
- Reviewer; Grant proposal for *Fonds de la Recherche Scientifique - FNRS, Belgium*; 2022
- Reviewer for a promotion case at *National Taiwan University*
- Reviewer; *NSERC Discovery Grant research proposal* (2*x*); 2020
- Reviewer; Grant proposal for *National Science Centre, Poland*; 2020
- Research Output Evaluator; *Czech Academy of Sciences*; 2020
- Reviewer; *Banff International Research Station workshop proposal*; 2019
- Member of Preliminary Review Committee; *Shastri Indo-Canadian Institute*; 2018–onwards
- Reviewer; *NSERC Discovery Grant research proposal*; 2015
- Invited panel reviewer; *National Science Foundation*; 2010
- Reviewer for a tenure case at *National Taiwan University*
- Reviewer for *Mathematical Reviews*; I have written over 100 reviews since 2003
- **Refereeing**. I have refereed submitted articles for the following journals (several on multiple occasions):
  - *Advances in Mathematics*
  - *Annali della Scuola Normale di Pisa - Classe di Scienze*
  - *Annals of Global Analysis and Geometry*
  - *Asian Journal of Mathematics*
  - *Bulletin of the Belgian Mathematical Society - Simon Stevin*
  - *Bulletin of the London Mathematical Society*
  - *Canadian Journal of Mathematics*
  - *Communications in Analysis and Geometry*
  - *Communications in Mathematical Physics (CMP)*
  - *Differential Geometry and its Applications*
  - *Duke Mathematical Journal*
  - *Geometric and Functional Analysis (GAFA)*
  - *Handbook of Geometric Analysis*
  - *International Journal of Mathematics*
  - *Inventiones Mathematicae*
  - *Journal of the American Mathematical Society (JAMS)*
  - *Journal of Combinatorial Designs*
  - *Journal of Differential Geometry*
  - *Journal für die reine und angewandte Mathematik (Crelle's Journal)*
  - *The Journal of Geometric Analysis*
  - *Journal of Geometry and Physics*
  - *Journal of the London Mathematical Society*
  - *Journal of Topology and Analysis*
  - *Mathematical Research Letters*
  - *Mathematische Annalen*
  - *Mathematische Nachrichten*

- *Mathematische Zeitschrift*
- *New York Journal of Mathematics*
- *Pacific Journal of Mathematics*
- *Proceedings of the American Mathematical Society*
- *Proceedings of the Strings-Math 2011 conference*
- *Progress in Mathematics*
- *Publicationes Mathematicae Debrecen*
- *Quarterly Journal of Mathematics*
- *SIGMA (Symmetry, Integrability and Geometry: Methods and Applications)*
- *Surveys in Differential Geometry*
- *Transactions of the American Mathematical Society*

Other Relevant Community Service

- Invited Panelist; Virtual conference of *STEMPOWER OTTAWA*; Aug 2020
- Coach; Mathematica Centrum competition; *Kitchener–Waterloo Bilingual School*; 2018–2020
- Mentor; *Virtual Researcher On Call* program at St Mary's Choir School in London, ON; Winter 2012

Invited Colloquium, Seminar, Workshop, and Conference Talks

[126] "Wild fantasies about potential G_2-analogues of the Calabi-Yau Theorem, and related ideas"; Workshop on 'New Directions in G_2 Geometry'; American Institute of Mathematics; 31/03/2025

[125] "A tale of two Lie groups"; **Colloquium**; *Stony Brook University*; 05/12/2024

[124] "Flows of geometric structures, especially G_2-structures"; **Mini-course of four lectures**; BRIDGES meeting in gauge theory, extremal structures, and stability; *Institut d'Études Scientifiques de Cargèse*; 25/06/2024–29/06/2024

[123] "A curious system of second order nonlinear PDEs for $U(m)$-structures on manifolds"; *The Graduate Center of the City University of New York*; 16/02/2024

[122] "A special class of k-harmonic maps inducing calibrated fibrations"; University of Oxford; 22/01/2024

[121] "Flows of G_2-structures"; *Fields Institute for Research in Mathematical Sciences*; 07/12/2023

[120] "A special class of k-harmonic maps inducing calibrated fibrations"; Special Session on 'Geometric Partial Differential Equations'; Winter Meeting of the Canadian Mathematical Society; *Montréal*; 2/12/2023

[119] "Flows of G_2-structures"; *University of British Columbia*; 10/10/2023

[118] "The geometry of G_2 manifolds: a marriage of nonassociative algebra and nonlinear analysis"; **Colloquium**; *Florida International University*; 23/02/2023

[117] "A variational characterization of certain calibrated submanifolds"; Geometric Analysis: Past, Present and Future; virtual pre-recorded meeting; *(online)*; premiered on 19/05/2022

[116] "Variational characterization of certain calibrated submanifolds"; Special Session on 'Recent Developments in Complex Geometry and Geometric Analysis'; Winter Meeting of the Canadian Mathematical Society; *(online)*; 12/04/2021

[115] "Towards higher dimensional Gromov compactness in G_2 and $Spin(7)$ manifolds"; Special Session on 'Geometric Analysis'; Summer Meeting of the Canadian Mathematical Society; *(online)*; 08/06/2021

[114] "Towards higher dimensional Gromov compactness in G_2 and $Spin(7)$ manifolds"; *Geometry Webinar AmSur/AmSul*; 21/05/2021

[113] "Bryant–Salamon G_2-manifolds and coassociative fibrations"; *University of California at Irvine* (online); 10/11/2020

[112] "Towards higher dimensional Gromov compactness in G_2 and Spin(7) manifolds"; *Syracuse University* (online); 16/09/2020

[111] "Bryant–Salamon G_2-manifolds and coassociative fibrations"; Workshop on special geometries and gauge theory; *originally scheduled for Université de Bretagne Occidentale, moved to online*; 29/06/2020

[110] "Towards higher dimensional Gromov compactness in G_2 and Spin(7) manifolds"; *University of Waterloo* (online); 29/05/2020

[109] "Conical singularities of G_2-manifolds in mathematics and physics"; *University of Michigan*; 21/02/2020

[108] "Bryant–Salamon G_2-manifolds and coassociative fibrations"; *Michigan State University*; 20/02/2020

[107] "Towards higher dimensional Gromov compactness in G_2 and Spin(7) manifolds"; *University of Connecticut*; 09/12/2019

[106] "Towards higher dimensional Gromov compactness in G_2 and Spin(7) manifolds"; *Columbia University*; 06/12/2019

[105] "Towards higher dimensional Gromov compactness in G_2 and Spin(7) manifolds"; *Princeton University*; 04/12/2019

[104] "Towards higher dimensional Gromov compactness in G_2 and Spin(7) manifolds"; *McGill University*; 06/11/2019

[103] "Cohomologies on almost complex manifolds and the $\partial\bar{\partial}$-lemma"; **Colloquium**; *Center of Mathematical Sciences and Applications, Harvard University*; 02/10/2019

[102] "Constructions of compact torsion-free G_2-manifolds"; Members' Seminar; *Center of Mathematical Sciences and Applications, Harvard University*; 06/09/2019

[101] "A gradient flow of isometric G_2-structures"; A Celebration of Geometry, Analysis, and Physics: Conference honouring Niky Kamran on his 60th Birthday; *Centre de Recherches Mathématiques*; 14/06/2019

[100] "A curious system of second order nonlinear PDEs for U(m)-structures on manifolds"; *Harvard University*; 08/04/2019

[99] "A curious system of second order nonlinear PDEs for U(m)-structures on manifolds"; *University of Waterloo*; 05/04/2019

[98] "A curious system of second order nonlinear PDEs for U(m)-structures on manifolds"; *McMaster University*; 15/11/2018

[97] "Constructions of compact torsion-free G_2-manifolds"; *Columbia University*; 30/03/2018

[96] "Cohomologies on almost complex manifolds and the $\partial\bar{\partial}$-lemma"; *City University of New York Graduate Center*; 29/03/2018

[95] "Two simple ideas from calculus that are ubiquitous in geometric analysis"; **Prof Talk**, Pure Math, Applied Math, and Combinatorics & Optimization Club; *University of Waterloo*; 22/03/2018

[94] "Constructions of compact torsion-free G_2-manifolds"; 1st Canadian Geometry and Topology Seminar; *Fields Institute*; 16/03/2018

[93] "A new construction of compact G_2-manifolds by gluing families of Eguchi-Hanson spaces"; Workshop on G_2-manifolds; *Fields Institute*; 25/08/2017

[92] "Introduction to G_2 geometry, Part II."; Minischool on G_2-manifolds; Fields Institute; 19/08/2017

[91] "Introduction to G_2 geometry, Part I."; Minischool on G_2-manifolds; Fields Institute; 19/08/2017

[90] "Geometric Analysis: Fields 2017"; Annual General Meeting; Fields Institute; 29/06/2017

[89] "Constructing compact G_2 manifolds by resolving (Calabi-Yau 3-fold) $\times S^1/\mathbb{Z}_2$"; Conference on 'Constructions of compact exceptional holonomy spaces: past present and future'; *Imperial College London*; 05/06/2017

[88] "Octonionic-algebraic structure and curvature of the moduli space of G_2 manifolds"; Special Session on 'G_2 manifolds'; Sectional Meeting of the American Mathematical Society; *Stony Brook University*; 19/03/2016

[87] "Partial classification of twisted austere 3-folds"; *Western University*; 26/01/2016

[86] "Octonionic-algebraic structure and curvature of the moduli space of G_2 manifolds"; Special Session on 'Differential Geometry'; Winter Meeting of the Canadian Mathematical Society; *Montréal*; 5/12/2015

[85] "Existence of G_2 conifolds: a progress report"; Special Session on 'Analysis on Singular Manifolds'; Winter Meeting of the Canadian Mathematical Society; *Montréal*; 5/12/2015

[84] "Octonionic-algebraic structure and curvature of the moduli space of G_2 manifolds"; *Université du Québec à Montréal*; 27/11/2015

[83] "Octonionic-algebraic structure and curvature of the moduli space of G_2 manifolds"; *Duke University*; 22/09/2015

[82] "The geometry of G_2 manifolds: a marriage of nonassociative algebra and nonlinear analysis"; **Colloquium**; *College of Charleston*; 18/09/2015

[81] "G_2 conifolds: A survey"; Workshop on 'Special Geometric Structures in Mathematics and Physics'; *Universität Hamburg*; 12/09/2014

[80] "Introduction to G_2 geometry"; Workshop on 'Special Geometric Structures in Mathematics and Physics'; *Universität Hamburg*; 11/09/2014

[79] "G_2 conifolds: desingularization, deformation, and construction?"; Program on G_2 manifolds; *Simons Center for Geometry and Physics*; 22/08/2014

[78] "Fundamentals of exceptional holonomy, II"; Program on G_2 manifolds; *Simons Center for Geometry and Physics*; 20/08/2014

[77] "Fundamentals of exceptional holonomy, I"; Program on G_2 manifolds; *Simons Center for Geometry and Physics*; 19/08/2014

[76] "Curvature of the G_2 moduli space"; G_2 **Days 2014**; *University College London*; 16/07/2014

[75] "Centro-affine geometry and curvature of the moduli space of G_2 metrics"; Special Session on 'Symplectic geometry and special metrics'; Joint Congress among Italian and Spanish Mathematical Societies; *University of the Basque Country*; 01/07/2014

[74] "An introduction to G_2 manifolds and G_2 conifolds"; **Colloquium**; *Western University*; 24/01/2014

[73] "The mathematics of G_2 conifolds for M-theory"; Workshop on 'Physics Around Mirror Symmetry'; *Perimeter Institute for Theoretical Physics*; 25/10/2013

[72] "Moduli spaces of G_2 manifolds and G_2 conifolds"; Workshop on Moduli Spaces and their Invariants in Mathematical Physics; *Centre de Recherches Mathématiques*; 05/06/2013

[71] "A survey of results about G_2 conifolds"; *Harvard University*; 16/04/2013

[70] "G_2 manifolds and G_2 conifolds"; *Hong Kong University*; 20/12/2012

[69] "Centro-affine geometry and curvature of the moduli space of G_2 metrics"; *City University on New York Graduate Center*; 20/11/2012

[68] "G_2 manifolds and G_2 conifolds"; *University of Pennsylvania*; 15/11/2012

[67] "Deforming G_2 conifolds"; *Brown University*; 05/11/2012

[66] "A survey of results about G_2 conifolds"; International Conference on Cycles, Calibrations, and Non-linear Partial Differential Equations Celebrating Blaine Lawson's 70th Birthday; *Stony Brook University and Simons Center for Geometry and Physics*; 28/10/2012

[65] "Deforming G_2 conifolds"; *Rutgers University – New Brunswick*; 15/10/2012

[64] "G_2 manifolds and G_2 conifolds"; **Colloquium**; *Rutgers University – Newark*; 26/09/2012

[63] "Deforming G_2 conifolds"; *Princeton University*; 21/09/2012

[62] "The moduli space of asymptotically conical G_2 manifolds"; Workshop on Geometric PDE; *Centre de Recherches Mathématiques*; 26/04/2012

[61] "A new construction of compact G_2 manifolds by glueing families of Eguchi–Hanson spaces"; *University of Toronto*; 17/12/2012

[60] "The moduli space of asymptotically conical G_2 manifolds"; Special Session on 'Differential Geometry'; Winter Meeting of the Canadian Mathematical Society; *Toronto*; 11/12/2011

[59] "A new construction of compact G_2 manifolds by glueing families of Eguchi–Hanson spaces"; *McMaster University*; 24/11/2011

[58] "A new construction of compact G_2 manifolds by glueing families of Eguchi–Hanson spaces"; Special Session on 'Geometry and Physics'; Summer Meeting of the Canadian Mathematical Society; *University of Alberta*; 04/06/2011

[57] "A new construction of compact G_2 manifolds by glueing families of Eguchi–Hanson spaces"; *Université du Québec à Montréal*; 20/04/2011

[56] "Two simple ideas from calculus applied to Riemannian geometry"; *Case Western Reserve University*; 15/11/2010

[55] "Flows of G_2 structures"; *University of Toledo*; 12/11/2010

[54] "Algèbre et Géométrie: Sphères et Espaces Projectifs"; Canadian Undergraduate Mathematics Conference **(Keynote Speaker)**; *University of Waterloo*; 08/07/2010

[53] "Curvature of the moduli space of G_2 metrics"; *University of Toronto*; 05/03/2010

[52] "Curvature of the moduli space of G_2 metrics"; *University of Oxford*; 15/02/2010

[51] "Two simple ideas from calculus applied to Riemannian geometry"; **Colloquium**; *Wilfrid Laurier University*; 22/01/2010

[50] "Curvature of the moduli space of G_2 metrics"; *Western University*; 21/09/2009

[49] "An exceptional structure in 7-dimensional geometry"; **Colloquium**; *University of Toledo*; 03/09/2009

[48] "Curvature of the moduli space of G_2 metrics"; Special Session on 'Differential Geometry'; CMS-SMM-2009: Second Joint Meeting of the Canadian Mathematical Society and the Sociedad Matemática Mexicana 2009; *University of British Columbia*; 14/08/2009

[47] "Structure of the G_2 Moduli Space;" *McMaster University*; 12/03/2009

[46] "Introduction to G_2 geometry, Part Two"; *University of Waterloo*; 06/02/2009

[45] "Introduction to G_2 geometry, Part One"; *University of Waterloo*; 23/01/2009

[44] "Introduction to G_2 geometry, Part Two"; *University of Oxford*; 13/11/2008

[43] "Introduction to G_2 geometry, Part One"; *University of Oxford*; 06/11/2008

[42] "Conical Singularities in G_2 manifolds"; Special Session on Geometric and Nonlinear Analysis; Second Canada-France Math Congress; *Université du Québec à Montréal*; 02-05/06/2008

[41] "What are G_2 manifolds?"; **Colloquium**; *University of Warwick*; 09/05/2008

[40] "G_2 manifolds with isolated conical singularities"; *University of Oxford*; 28/04/2008

[39] "Flows of G_2 structures"; Workshop on Geometric Evolution Equations; *Centre de Recherches Mathématiques*; 16/04/2008

[38] "G_2 manifolds with isolated conical singularities'"; *Duke University*; 14/04/2008

[37] "G_2 manifolds with isolated conical singularities"; Special Session on 'Differential Geometry and Global Analysis'; 60th British Mathematical Colloquium; *University of York*; 26/03/2008

[36] "G_2 manifolds with isolated conical singularities"; *Université du Québec à Montréal*; 29/02/2008

[35] "G_2 manifolds with isolated conical singularities"; *Harvard University*; 26/02/2008

[34] "What is a G_2 manifold?"; **Department Lecture**; *University of Cyprus*; 06/02/2008

[33] "Structure of the G_2 Moduli Space"; *University of Leeds*; 30/01/2008

[32] "G_2" manifolds: Exceptional geometric structures arising from exceptional algebra"; **Special Colloquium**; *University of Waterloo*; 25/01/2008

[31] "Moduli spaces of calibrated cycles in G_2 manifolds"; Workshop on Minimal Submanifolds and Related Topics; *Banff International Research Station*; 10/12/2007

[30] "Structure of the G_2 Moduli Space"; *Imperial College London*; 07/12/2007

[29] "Structure of the G_2 Moduli Space"; *University of Cambridge*; 28/11/2007

[28] "Structure of the G_2 Moduli Space"; *University of Edinburgh*; 14/11/2007

[27] "How to minimize without knowing how to differentiate (in Riemannian Geometry)"; **Colloquium**; *University College Cork*; 01/11/2007

[26] "Flows of G_2 and $\mathrm{Spin}(7)$ structures"; *University College Cork*; 01/11/2007

[25] "Flows of G_2 and $\mathrm{Spin}(7)$ structures"; *University of Oxford*; 22/10/2007

[24] "Geometric Flows on Manifolds with G_2 or $\mathrm{Spin}(7)$-structure"; 10th International Conference on Differential Geometry and Its Applications; *Palacky University*, Czech Republic; 30/08/2007

[23] "Moduli Spaces and Functionals in G_2-Geometry"; Workshop on the Physics and Mathematics of G_2 Compactifications; Michigan Center for Theoretical Physics, *University of Michigan*; 04/05/2007

[22] "Geometric Flows on Manifolds with G_2-structure"; *Stanford University*; 25/04/2007

[21] "Moduli Spaces and Functionals in G_2-Geometry"; *University of California at Los Angeles*; 23/04/2007

[20] "Geometric Flows on Manifolds with G_2-structure"; *University of California at Irvine*; 27/02/2007

[19] "Geometric Flows on Manifolds with G_2-structure"; *Mathematical Sciences Research Institute*; 06/02/2007

[18] "The Hitchin Heat Flow in G_2-Geometry, continued"; *Mathematical Sciences Research Institute*; 30/11/2006

[17] "The Hitchin Heat Flow in G_2-Geometry"; *Mathematical Sciences Research Institute*; 16/11/2006

[16] "Introduction to G_2-geometry"; *Mathematical Sciences Research Institute*; 20/10/2006

[15] "Calibrated Sub-bundles in Non-compact Manifolds of Special Holonomy"; Workshop in Geometry; Institute of Mathematical Sciences, *Chinese University of Hong Kong*; 29/05/2006

[14] "Algebra and Spheres in Higher Dimensions"; **Enrichment Programme for Young Mathematics Talents**; *Chinese University of Hong Kong*; 27/05/2006

[13] "Algebraic Structure of the Local Moduli Space of G_2 Metrics"; Special Session on Riemannian Manifolds with Additional Structures, AMS Regional Meeting; *Florida International University*; 01/04/2006

[12] "Calibrated Geometries and Special Holonomy"; **Colloquium**; *University of Toledo*; 17/03/2006

[11] "Calibrated Sub-bundles in Non-compact Manifolds of Special Holonomy"; *Michigan State University*; 20/09/2005

[10] "The Moduli Space of G_2 Metrics"; *Michigan State University*; 23/03/2005

[9] "The Moduli Space of G_2 Metrics"; Workshop on Geometry and Topology; *University of Minnesota*; 19/03/2005

[8] "The Moduli Space of G_2 Metrics"; *Université du Québec à Montréal*; 11/03/2005

[7] "Bundle Construction of Calibrated Submanifolds"; *Columbia University*; 18/11/2004

[6] "Special Lecture Series on G_2-Geometry"; Institute of Mathematical Sciences, *Chinese University of Hong Kong*; 12-29/11/2004

[5] "New Examples of Coassociative Submanifolds"; Short Program in Riemannian Geometry; *Centre de recherches mathématiques*; 09/07/2004

[4] "Deformations of G_2 Structures on Manifolds"; *McMaster University*; 15/09/2003

[3] "Deformations of G_2 Structures on Manifolds"; Von Neumann Symposium on Complex Geometry, Calibrations, and Special Holonomy; *Mathematical Sciences Research Institute*; 16/08/2003

[2] "Deformations of G_2 Structures on Manifolds"; Special Session on Nonlinear Partial Differential Equations in Differential Geometry, AMS Regional Meeting; *Courant Institute*; 13/04/2003

[1] "Special Lagrangian Submanifolds in Mirror Symmetry"; *Université du Québec à Montréal*; 21/01/2000

Awards and Academic Honours (including Teaching Awards)

University of Waterloo

- Outstanding Performance Award; 2023

University of Oxford

- Marie Curie Incoming International Fellowship; 2007–2009

Mathematical Sciences Research Institute

- MSRI Postdoctoral Fellowship; 2006–2007

McMaster University

- NSERC PDF Postdoctoral Fellowship; 2003–2005

Harvard University

- Certificate of Distinction in Teaching; Spring 2003
- Certificate of Distinction in Teaching; Fall 2002
- Certificate of Distinction in Teaching; Fall 2000
- Bourse du Fonds FCAR; 2001–2002

- Certificate of Distinction in Teaching; Fall 1999
- NSERC PGS B Postgraduate Scholarship; 1999–2001
- Joseph Leonard Walsh Fellowship; 1998–1999
- James K. Whittemore Scholarship; 1997–1998
- NSERC PGS A Postgraduate Scholarship; 1997–1999

McGill University

- First Class Honours in Mathematics
- First Class Honours in Physics
- Dean's Honour List; June 1997
- Moyse Travelling Scholarship; June 1997
- Anne Molson Gold Medal; June 1997
- Horace Watson Medal and Prize; June 1997
- James F. Mathison Scholarship; 1996–1997
- Sir Edward Beatty Memorial Scholarship; 1996–1997
- H.J. Brennan Memorial Scholarship; 1995–1996
- NSERC Undergraduate Student Research Award; Summer 1995
- Hewlett-Packard Prize in Science; January 1995
- E.P. Aikman Prize in Physics; June 1994
- J.W. McConnell Entrance Scholarship; 1993–1997
- Canada Scholarship in Science and Engineering; 1993–1997