

RAGINI SINGHAL

Curriculum Vitae

Department of Pure Mathematics
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Education

- 2017-present Ph.D. in Mathematics, **University of Waterloo**, Waterloo, Canada.
Advisors - [Benoit Charbonneau](#)
[Spiro Karigiannis](#)
Expected Completion - April 2021
- 2015-2016 M.Sc. in Pure Mathematics, **Imperial College London**, UK.
M.Sc. Thesis - Stable minimal cones in Euclidean space.
M.Sc. Thesis Advisor - [André Arroja Neves](#)
- 2011-2015 BS in Mathematics, **Indian Institute of Technology, Kanpur**, India.
Undergraduate Thesis - Application of knot theory to detect chirality of molecules.
Undergraduate Thesis Advisor - [Aparna Dar](#)

Research Interests

Riemannian geometry, Geometric analysis, Gauge theory, Deformation theory (specially on metrics with special holonomy)

Invited Short-Term Visits

- May-June 2014 Summer Research Visitor, **Simon Fraser University, Canada**
- May-July 2013 Fellow, Student Research Fellowship Program 2013,
Indian Statistical Institute, New Delhi, India

Preprints

- (2) R. Singhal, *Deformations of G_2 instantons on nearly G_2 manifolds*, in preparation (draft available upon request).
- (1) S. Dwivedi and R. Singhal, *Deformation theory of nearly G_2 manifolds*, [arXiv:2007.02497](https://arxiv.org/abs/2007.02497).

Invited Talks

- "Deformation of instantons on nearly G_2 manifolds", Ottawa Mathematical Conference 2020, Ottawa.
- "Deformation theory of nearly G_2 manifolds", KCL/UCL Junior Geometry Seminar, 2020.
- "Deformation of instantons on nearly G_2 manifolds" **IIT Kanpur, India**; 11/11/2019
- "[Deformations of \$G_2\$ instantons on nearly \$G_2\$ manifolds](#)", G_2 geometry and related topics, **CMO-BIRS, Oaxaca, Mexico**; 07/05/2019
- "Minimal and Willmore surfaces", Graduate Student Colloquium, **University of Waterloo**, Canada; 26/03/2019

Honours and Awards

- 2019 Graduate Studies Research Travel, University of Waterloo, Canada
- 2017-present Graduate Research Scholarship, University of Waterloo, Waterloo, Canada
- 2017-present International Doctoral Student Award, University of Waterloo, Canada
- 2017-present Provost Doctoral Entrance Award for Women, University of Waterloo, Canada
- 2015-2016 Imperial India Foundation Scholarship, **Imperial College London**, UK
- 2013 Summer Research Fellowship, Indian Academy of Sciences/ Indian National Science Academy/National Academy of Sciences, India
- 2011-2015 Kishor Vaigyanik Protsahan Yojana (KVPY) scholarship, Indian Academy of Sciences, Government of India

Talks in Seminars

- 2020 January - Talk on the deformation theory of nearly G_2 manifolds, [Geometry Working Seminar](#), University of Waterloo.
- 2019 June - Series of talks on "Self-dual Yang–Mills connections on non-self-dual 4-manifolds", [Geometry Working Seminar](#), University of Waterloo.
- 2019 March - Series of talks on "Deformation of nearly G_2 instantons", [Geometry Working Seminar](#), University of Waterloo.
- 2018 September - Stability and isolation phenomena for Yang–Mills fields, [Geometry Working Seminar](#), University of Waterloo
- 2018 April - Series of talks on " $SU(2)^2$ invariant G_2 instantons", [Geometry Working Seminar](#), University of Waterloo.
- 2017 September - Stability of minimal cones in Euclidean space, [Geometry Working Seminar](#), University of Waterloo.

Teaching

Instructor & Coordinator

Spring 2020 MATH 117 - Calculus I for Engineers

Teaching Assistant

Winter 2020	MATH 648 - PMATH 450/650 Lebesgue integration and Fourier analysis
	MATH 235 Linear Algebra (tutorial center)
Fall 2019	PMATH 365/465 Differential geometry
	MMT 647 Foundations of Calculus I
Spring 2019	PMATH 321 Non Euclidean geometry
	PMATH 351 Real Analysis
Winter 2019	PMATH 333 Introduction to real analysis
	MATH 118 Calculus 2 for Engineering
Fall 2018	MATH 235 Linear Algebra
	PMATH 331 Applied real analysis
Spring 2018	MMT 648 Foundations of Calculus II
Winter 2018	PMATH 365/465 Differential geometry
	MATH 235 Linear Algebra
Fall 2017	PMATH 365/465 Differential geometry
	MATH 147 Calculus I (Advanced level)

Conference and Workshop participation

- Workshop on special geometries and gauge theory, originally scheduled for Universite de Bretagne Occidentale, France, 2020 (moved to online).

- CMS Winter meeting, Toronto, Canada; 2019.
- British Isles Graduate Workshop on Gauge theory in higher dimensions, Jersey, UK; 2019.
- Special Holonomy and Calibrated Geometry, Imperial College, London, UK; 2019
- Séminaire de Mathématiques Supérieures 2018: Derived Geometry and Higher Categorical Structures in Geometry and Physics, Fields Institute, Canada; 2018
- Geometry and Physics Conference, Fields Institute, Canada; 2017
- Workshop on Mean Curvature Flow and Ricci Flow, Fields Institute, Canada; 2017
- Minischool on Mean Curvature Flow and Ricci Flow, Fields Institute, Toronto, Canada; 2017
- Workshop on General Relativity & AdS/CFT, Fields Institute, Toronto, Canada; 2017
- Mini-School and Conference on G_2 manifolds, Fields Institute, Toronto, Canada; 2017
- Summer School in Geometric Analysis, Fields Institute, Toronto, Canada; 2017
- RTG Workshop on the Geometry and Physics of Higgs Bundles II, November 11-12, University of Illinois at Chicago; 2017
- Conference in Differential Geometry, LeBrun Fest 2016, 5-9 July, Centre de Recherches Mathématiques, Canada; 2016
- Warwick Imperial Autumn Meeting, 28 November, University of Warwick, UK; 2015
- Conference in Geometry, Topology and Dynamics at DST-CIMS, Banaras Hindu University, India; 2014

Services

- Volunteer, Mathematica Centrum Contest tutor, [K-W Bilingual School](#), Waterloo.
- Judge, Science Fair, [K-W Bilingual School](#), Waterloo.
- Co-organizer, Pure Mathematics Graduate Student Colloquium, University of Waterloo.
- Graduate Volunteer, The Great Polytope Barn-Raising Project, University of Waterloo. Trained and coordinated undergraduate volunteers in building a model of a 4D-polytope.
- Grader, CEMC Math contest, University of Waterloo.

Last Updated : August 5, 2020