

Nima Hoda

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Languages and Citizenship

Citizenship: Canadian

Languages: English: native
French: advanced
Persian: conversational

Academic Positions

- NSERC H.C. Wang Visiting Assistant Professor, Cornell University, Aug. 2022 – present
- Postdoctoral Researcher, École Normale Supérieure, Oct. 2019 – Jul. 2022
- Assistant Professor (Adiunkt), University of Wrocław, Feb. 2019 – Sep. 2019

Education

- Ph.D. Mathematics, McGill University, May 2019
- M.Sc. Mathematics, McGill University, Oct. 2015
- B.Math Honours in Computer Science and Mathematics, Carleton University, Jun. 2013

Papers

Accepted for publication or in print:

- T. Haettel, N. Hoda, H. Petyt, *The coarse Helly property, hierarchical hyperbolicity, and semi-hyperbolicity*, *Geom. Topol.*, to appear, 35 pages.
- N. Hoda, *Shortcut Graphs and Groups*, *Trans. Am. Math. Soc.* 375 (2022), no. 4, 2417–2458.
- N. Hoda, *Quadric Complexes*, *Mich. Math. J.* 69 (2020), no. 2, 241–271.
- N. Hoda, D. T. Wise, D. J. Woodhouse, *Residually Finite Tubular Groups*, *Proc. Math. Roy. Soc. Edinb. A* 150 (2019), no. 6, 2937–2951.
- N. Hoda, D. Osajda, *Two-Dimensional Systolic Complexes Satisfy Property A*, *Int. J. Algebra Comput.* 28 (2018), no. 7, 1247–1254.
- P. Bose, V. Dujmović, N. Hoda, P. Morin, *Visibility-Monotonic Polygon Deflation*, *Contrib. to Discret. Math.* 10 (2015), no. 1, 1–21.

Submitted for publication:

- C. H. Cashen, N. Hoda, D. J. Woodhouse, *Asymptotic cones of snowflake groups and the strong shortcut property*, arXiv:2202.11626 (2022), 67 pages.
- N. Hoda, *Strongly Shortcut Spaces*, arXiv:2010.07400 (2020), 30 pages.
- N. Hoda, S. Krishna M S, *Relatively hyperbolic groups with strongly shortcut parabolics are strongly shortcut*, arXiv:2010.03421 (2020), 13 pages.
- N. Hoda, *Crystallographic Helly Groups*, arXiv:1804.04630 (2020), 17 pages.
- N. Hoda, *Bisimplicial Complexes and Asphericity*, arXiv:1804.04630 (2018), 19 pages.

In preparation:

- N. Hoda, J. Świątkowski, *Trees of Graphs as Boundaries of Hyperbolic Groups*.

Honours and Awards

- NSERC Postdoctoral Fellowship, 2021
- Pelletier Fellowship, 2018/2019
- ISM Scholarship, 2018/2019
- Graduate Mobility Award, 2017
- NSERC Postgraduate Scholarship–Doctoral Program, 2015–2018
- ISM Scholarship, 2014/2015
- Lorne Trottier Fellowship, 2013/2014
- Governor General’s Academic Medal, 2013
- NSERC Canada Graduate Scholarship–Master’s Program, 2013/2014
- Richard J. Semple Memorial Award, 2012/2013
- Carleton Academic Scholarship, 2012/2013
- NSERC Undergraduate Student Research Award, 2012
- I-CUREUS Research Internship, 2012
- Helga H. Schirmer Scholarship in Mathematics, 2011/2012
- Carleton Academic Scholarship, 2011/2012
- NSERC Undergraduate Student Research Award, 2011

Presentations and Talks

- *Cercles isométriques mais contractiles dans les cônes asymptotiques des groupes*, Séminaire théorie des modèles et groupes, Institut de Mathématiques de Jussieu-Paris Rive Gauche, 2022.
- *Strong shortcut groups and asymptotic cones*, University of Fribourg, 2022.
- *Strongly Shortcut Spaces*, Metric Graph Theory and Related Topics, CIRM, 2021.
- *Hierarchical hyperbolicity, coarse Helly spaces and the strong shortcut property*, Topology Seminar, University of Wisconsin-Milwaukee, 2021.
- *Strongly Shortcut Graphs (and Spaces) and Groups*, Group Theory Seminar, Instituto de Ciencias Matemáticas, 2021.
- *Hierarchical hyperbolicity, coarse Helly spaces and the strong shortcut property*, Max Dehn Seminar, University of Utah, 2021.
- *Crystallographic Helly Groups*, Mini-workshop on nonpositively curved complexes, Oberwolfach, 2021.
- *Raconte-moi l’enveloppe injective d’un espace métrique*, Séminaire de l’équipe algèbre et géométrie, ENS Paris, 2020.
- *Crystallographic Helly Groups*, Groups and Geometry in the South East, 2020.
- *Strongly Shortcut Spaces*, Geometry and Topology Seminar, University of Bristol, 2020.
- *Crystallographic Helly Groups*, Geometry, Topology and Group Theory Seminar, University of Münster, 2020.
- *Shortcut Graphs and Groups*, Virtual Geometric Group Theory Conference, CIRM, 2020.
- *Hierarchical hyperbolicity, coarse Helly spaces and the strong shortcut property*, University of Arkansas Topology Seminar, 2020.
- *Shortcut Graphs and Groups*, Séminaire Gaston Darboux, Université de Montpellier, 2020.
- *Constructing Bisimplices*, Workshop on Polyhedral Products in Geometric Group Theory, Fields Institute, 2020.

- *Shortcut Graphs and Groups*, Group Theory Seminar, ENS Paris, 2019.
- *Crystallographic Helly Groups*, Ottawa-Carleton Joint Algebra Seminar, 2019.
- *Shortcut Graphs and Groups*, Geometry and Analysis on Groups Research Seminar, University of Vienna, 2019.
- *Constructing Bisimplices*, Ottawa-Carleton Combinatorics and Optimization Seminar, 2019.
- *Shortcut Graphs and Groups*, Geometry and Topology Seminar, University of Warwick, 2019.
- *Crystallographic Helly Groups*, McGill Geometric Group Theory Seminar, 2019.
- *Shortcut Graphs and Groups*, Geometry and Topology Seminar, Technion, 2019.
- *Crystallographic Helly Groups*, Wrocław Geometry Seminar, 2019.
- *Shortcut Graphs and Groups*, Banach Center Simons Semester Seminar, 2019.
- *Constructing Bisimplices*, McGill Geometric Group Theory Seminar, 2019.
- *Shortcut Graphs and Groups*, Wrocław Geometry Seminar, 2019.
- *Quadric Complexes*, Nonpositively Curved Groups on the Mediterranean, 2018.
- *Quadric Complexes*, Séminaire Algorithmique, Combinatoire et Recherche Opérationnelle, Laboratoire d'Informatique Fondamentale de Marseille, 2018.
- *Geocyclic Groups*, McGill Geometric Group Theory Seminar, 2017.
- *An Invitation to Combinatorial Group Theory*, Carleton University Algorithms Seminar, 2017.
- *Quadric Complexes*, Cornell Topology and Geometric Group Theory Seminar, 2017.
- *Quadric Complexes*, Wrocław Geometry Seminar, 2017.
- *Dismantlable Graphs*, McGill Discrete Mathematics and Optimization Student Seminar, 2017.
- *Quadric Complexes*, Young Geometric and Asymptotic Group Theory with Applications, 2017.
- *Braid Groups are Left-Orderable*, McGill Geometric Group Theory Seminar, 2014.
- *Discrete Morse Theory of Forman*, Cookies and My Favorite Object in Math Graduate Student Seminar, 2014.
- *Visibility-Monotonic Polygon Deflation*, Canadian Conference on Computational Geometry, 2012.
- *Moser's entropy compression technique*, Carleton University Algorithms Seminar, 2012.
- *A Few Best Practices in Programming*, Carleton Computer Science Society Lecture Series, 2011.

Service Roles

Organizer of the Group Theory Seminar of the École Normale Supérieure, Oct. 2019 – Jul. 2022

Compiler of Oberwolfach Report for Mini-workshop on nonpositively curved complexes, Feb. 2021

Organizer of Maths-Sciences 2021 at the École Normale Supérieure, Jul. 2021

Local Organizer of Maths-Sciences 2020 at the École Normale Supérieure, Jul. 2020

Organizer of the McGill Geometric Group Theory Seminar, Sep. 2017 – Dec. 2018

Teaching

Small Cancellation Theory, Mar. 2019 – Jun. 2019

University of Wrocław

- Prepared notes from which I taught lectures.
- Prepared exercises for students to solve during exercise sessions.

Geometric Group Theory, Mar. 2019 – Jun. 2019

University of Wrocław

- Organized a student learning seminar course following the introductory text of Clara Löh.

Combinatorial Group Theory, Mar. 2019 – Jun. 2019

University of Wrocław

- Lead problem solving sessions for students based on exercises prepared by the lecturer of the course.

Teaching Assistant for MATH 235, Sep. 2018 – Dec. 2018

McGill University

- Prepared and taught weekly tutorials helping students with class material and solving examples.
- Graded final exam questions.
- Met with students during office hours for additional help

Teaching Assistant for MATH 150, Sep. 2015 – Dec. 2015

McGill University

- Prepared and taught weekly tutorials covering class material and solving examples.
- Graded midterm and final exam questions.

Teaching Assistant for MATH 123, Jan. 2014 – Apr. 2014

McGill University

- Prepared and taught weekly tutorials covering class material and solving examples.
- Graded midterm and final exam questions.

Industry Experience

Software Developer, May 2013 – Jun. 2013

Legitimix Inc., Ottawa

- Substantially improved software performance by optimizing a core library algorithm.
- Ported the core library to Apple iOS platforms.
- Updated external software dependencies to the latest stable releases.
- Deployed a fully automated virtual-machine-based cross-platform build system.

Software Developer, Jul. 2010 – Sep. 2010

Legitimix Inc., Ottawa

- Implemented data structures for representation of sparse graphs used in Low Density Parity Check codes (LDPC).
- Implemented a generic LDPC syndrome-decoder based on the belief propagation algorithm.