

Carolina Benedetti

CONTACT

INFORMATION

Department of Mathematics
Michigan State University
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RESEARCH INTERESTS

Algebra, combinatorics and their interaction with other branches of mathematics such as representation theory and geometry.

EDUCATION

York University, Toronto, ON. Canada

Ph.D., Mathematics, June 2013.

- Thesis Topic: *Combinatorial Hopf algebras and supercharacters*
- Adviser: Dr. Nantel Bergeron

University of the Andes, Bogota, Colombia

M.Sc., Mathematics, December, 2008.

- Thesis Topic: *Matroid polytopes as Minkowski sums*
- Adviser: Dr. Federico Ardila

National University of Colombia, Bogota, Colombia

B.Sc., Mathematics, June 2006

ACADEMIC

EXPERIENCE

Michigan State University,

Visiting Associate Professor

Fall '13 - Present

- Lecturer MTH 299 - Transitions to formal mathematics Fall '14
- Lecturer MTH 481 - Discrete mathematics I Spring '14, Summer '14
- Lecturer MTH 414 - Linear algebra II Fall '13
- Lecturer MTH 132 - Calculus I Fall '13

York University, Toronto, ON. Canada

Instructor - Applied linear algebra

Fall '12

Teaching Assistant

Sep 2009 - June 2013

- Tutor for the courses: Discrete Mathematics, Integral Calculus, Precalculus, Introduction to sets and logic.
- Marker for Differential Calculus and Linear Algebra
- Matlab Tutor

University of the Andes, Bogota, Colombia.

- Instructor for Precalculus. Spring '09
- Grader for Linear Algebra, Differential Calculus, Integral Calculus and Vectorial Calculus.

Fundación Banco de tiempo, Bogota, Colombia.

- Volunteer math tutor. Spring '06

PUBLICATIONS
AND PREPRINTS

A combinatorial Hopf algebra of simplicial complexes. Joint with J. Hallam, J. Machacek (In preparation).

Antipodes and involutions. Joint with B. Sagan. *arXiv: 1410.5023*.

Fomin-Greene monoids and Pieri operators. Joint work with N. Bergeron. *Fields Institute Comm.* 71, (2014), 305-338.

Schubert polynomials and k -Schur functions. Joint work with N. Bergeron. *Electron. J. Combinat.* 21, Issue 4 (2014).

Combinatorial Hopf algebras of superclass functions of type D . *J. of Alg. Comb.* 38, Issue 4 (2013), 767-783.

Supercharacters, symmetric functions in noncommuting variables, and related Hopf algebras. *Adv. in Math.* (2012). Vol. 229 No. 4. pp. 2310-2337. Joint work with M. Aguiar, C. André, N. Bergeron, Z. Chen, P. Diaconis, A. Hendrickson, S. Hsiao, M. Isaacs, A. Jedwab, K. Johnson, G. Karaali, A. Lauve, T. Le, S. Lewis, H. Li, K. Magaard, E. Marberg, J-C. Novelli, A. Pang, F. Saliola, L. Tevlin, J-Y. Thibon, N. Thiem, V. Venkateswaran, C. Vinroot, N. Yan and M. Zabrocki.

Matroid polytopes and their volumes. *Discrete and computational geometry.* 43. pp.841-854 (2010). Joint work with F. Ardila, J. Doker.

Politopos matroidales como sumas de Minkowski. *Master's thesis*, University of the Andes.

OTHERS

Teselaciones. *Gaceta de la RSME* 14. Nm. 3, pp. 463 - 490 (2011). Translation into Spanish of "Tilings" by F. Ardila, R. Stanley.

Editor **Supercharacters and Combinatorial Hopf algebras - Problem list.**
www.aimath.org/WWN/supercharacters/supercharacters.pdf

- SELECTED TALKS Combinatorics Seminar University of Michigan, Ann Arbor, 2014.
Combinatorics Seminar University of Washington, Seattle, 2014.
Combinatorics Seminar, University of Minnesota, 2014
AMS Special Session Combinatorial Avenues in Representation Theory, Boulder, 2013
CMS Winter meeting. Algebraic Combinatorics Session. Montreal, 2012.
Encuentro Colombiano de Combinatoria ECCO '12. Uniandes, Bogota, Colombia, 2012.
CMS Winter meeting. Algebraic Combinatorics Session. Toronto, 2011.
AMS Special Session Symmetric functions, symmetric group characters, and their generalizations. Winston Salem, 2011.
Seminar on Supercharacter theory. York University-Fields Institute. Fall 2010.
Seminaire de Combinatoire. Université du Québec à Montréal (UQAM). January 2010.
Formal Power Series and Algebraic Combinatorics (FPSAC). Linz, Austria. July 2009.
Seminar of Algebra and Combinatorics. Fields Institute, Canada. January 2009.
Seminar of algebra. San Francisco State University (SFSU). September 2008.
- POSTERS FPSAC 2013. Paris, France. June 2013.
FPSAC 2012. Nagoya, Japan. August 2012.
- CONFERENCES,
SEMINARS AND
WORKSHOPS ECCO'14. Encuentro Colombiano de Combinatoria. Bogotá, Colombia, 2014.
BIRS Workshop. Supercharacters and Hopf monoids. Banff, 2012
Combinatorial algebra meets algebraic combinatorics. UQAM, Montreal, 2012.
FPSAC'11. Reykjavik, 2011.
Sage days. Acadia University, Wolfville, 2011.
FPSAC'10. San Francisco, 2010.
Workshop on Supercharacters and Hopf algebras. AIM, Palo Alto, 2010.
Combinatorial Algebra meets Algebraic Combinatorics. Queens University, 2010.
FPSAC'09. Linz, 2009.
Geometry, topology and quantum theory. Villa de Leyva, Colombia, 2008.
FPSAC'08. Viña del Mar, 2008.
Workshop on Tropical Geometry. University of the Andes, Colombia, 2007.

PROFESIONAL
ACTIVITIES

Organizational and/or scientific committees

- AMS Sectional Meeting. Organizing Committee. MSU, March 2015.
- Hopf algebras and Combinatorics seminar. Organizer. MSU. Fall 2014.
- ALTENCOA 2014. Scientific Committee. Pasto Colombia. August 2014.
- ECCO 2014 Combinatorial Meeting. Co-organizer, Bogotá Colombia, June 2014.
- Combinatorial Algebra meets Algebraic Combinatorics. Co-organizer, Fields Institute - York University, Toronto, 2013.
- ECCO'12, Combinatorial Meeting, Co-organizer, Bogotá, Colombia, 2012.
- Student representative, Executive Committee Math&Stat department, York University, 2012.
- Student representative for pure math, Strategic Research Plan, York University, 2012.
- Student Seminar in Algebraic Combinatorics. Organizer, York University - Fields Institute, 2010.

Referee

- Electronic Journal of Combinatorics
- Journal of Algebraic Combinatorics
- SIAM Journal of Discrete Mathematics
- Formal Power Series and Algebraic Combinatorics 2014
- Lecturas Matemáticas - Colombian divulgative journal in mathematics - .

AWARDS

York University

- Graduate Research Assistantship, 2010-2013
- Mathematics Scholarship, 2009-2013

Art and Science Mazda Foundation

- Grant, 2009-2011

University of the Andes

- Grant: Proyecto semilla, 2008.
- Teacher Assistantship, 2008-2007.