

# Carolina Benedetti

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## CONTACT

INFORMATION      [cbenedet@fields.utoronto.ca](mailto:cbenedet@fields.utoronto.ca)  
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## RESEARCH INTERESTS

My research area is algebraic combinatorics. More specifically I work with combinatorial families like graphs, matroids, permutations, etc. and study their Hopf algebra structure from different perspectives (enumerative, representation theoretically, geometric, algebraic).

## EMPLOYMENT

**Universidad de los Andes,**  
Assistant Professor **Fall '17**

**York University-Fields Institute,**  
Postdoctoral Fellow **Fall '15 - Summer'17**

**Michigan State University,**  
Visiting Associate Professor **Fall '13 - Spring '15**

**York University,** Toronto, ON. Canada  
Instructor Fall '12

**University of the Andes,** Bogota, Colombia.  
Instructor. Spring '09

**Fundación Banco de tiempo,** Bogota, Colombia.  
Volunteer math tutor. Spring '06

## EDUCATION

**York University,** Toronto, ON. Canada  
Ph.D., Mathematics, June 2013.

**Universidad de los Andes,** Bogota, Colombia  
M.Sc., Mathematics, December, 2008.

**Universidad Nacional de Colombia,** Bogota, Colombia  
B.Sc., Mathematics, June 2006

PUBLICATIONS  
AND PREPRINTS

**Nonnesting and noncrossing polytopes of type  $A$ .** Joint with F. Alinieifard, N. Bergeron, L. Colmenarejo, S. Li, F. Saliola. *In preparation*.

**A quantum Murnaghan-Nakayama rule for the quantum cohomology of the flag manifold.** Joint with N. Bergeron, L. Colmenarejo, F. Saliola, F. Sottile. *In preparation*.

**Cancelation free formula for the antipode of linearized Hopf monoid.** Joint with N. Bergeron. *Submitted*.

**A combinatorial Hopf algebra of simplicial complexes.** Joint with J. Hallam, J. Machacek *SIAM J. Discrete Math.* 30, (2016), no. 3, 1737-1757.

**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](http://www.aimath.org/WWN/supercharacters/supercharacters.pdf)

SELECTED AND  
UPCOMING TALKS

- Minicourse teacher, Días de Combinatoria, Medellín, July 2017.
- CanaDAM, Ryerson University, June 2017.
- Algebraic Combinatorixx2, BIRS, May 2017.
- Algebraic Geometry and Combinatorics Seminar, University of Illinois-Urbana Champaign, April 2017.
- Discrete Geometry and Combinatorics Seminar, Cornell University, October 2016
- Women in Mathematics in Latin America: Barriers, Advancements and New Perspectives, Casa Matemática Oaxaca, August 2016.
- V Latinoamerican Congress of Mathematicians, Universidad del Atlantico, July 2016.
- Discrete Mathematics Seminar, University of Kentucky, March 2016.
- Combinatorics Seminar, University of Waterloo, March 2016.
- Combinatorics Seminar, University of Miami, December 2015.
- AMS Special Session Hopf algebras in Combinatorics, Chicago, 2015.
- Algebraic and Combinatorics Seminar Central Michigan University, 2015.
- Combinatorics Seminar University of Michigan, Ann Arbor, 2014.
- Encuentro Colombiano de Combinatoria ECCO '14. Bogota, Colombia, 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. Bogota, Colombia, 2012.
- CMS Winter meeting. Algebraic Combinatorics Session. Toronto, 2011.
- AMS Special Session Symmetric functions, symmetric group characters, and their generalizations. Winstom 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 2017. London.

FPSAC 2015. South Korea.

FPSAC 2013. France.

FPSAC 2012. Japan.

CONFERENCES,  
SEMINARS AND  
WORKSHOPS  
ATTENDED.

Women in algebraic combinatorics. Banff, May 2017.

ECCO'16. Encuentro Colombiano de Combinatoria. Medellín, Colombia, 2016.

AIM Workshop. Polyhedral geometry and Partition theory. AIM, Palo Alto, 2016

Positivity in algebraic combinatorics. Banff, August 2015.

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**

- Co-organizer Días de Combinatoria 2017, Medellín Colombia, July 2017.
- Organizer Polytopes Seminar at York University, Fall-Winter 2016.
- Co-chair Scientific Committee ECCO'18 Colombian Combinatorial Meeting, Barranquilla Colombia, June 2018.
- ECCO 2016 Colombian Combinatorial Meeting. Co-organizer, Medellín Colombia, June 2016.
- Algebraic Combinatorics Seminar, Fields Institute, Fall 2015.
- Applied Algebra Seminar, York University, Fall 2015.
- AMS Sectional Meeting. Organizing Committee. MSU, March 2015.
- Hopf algebras and Combinatorics seminar. Organizer. MSU. 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

Art and Science Mazda Foundation

- Grant, 2009-2011

University of the Andes

- Grant: Proyecto semilla, 2008.