

# 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

### **York University-Fields Institute,**

Postdoctoral Fellow

**Summer '15 - Present**

### **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.

### **University of the Andes, Bogota, Colombia**

M.Sc., Mathematics, December, 2008.

### **National University of Colombia, Bogota, Colombia**

B.Sc., Mathematics, June 2006

PUBLICATIONS  
AND PREPRINTS

**A combinatorial Hopf algebra of simplicial complexes.** Joint with J. Hallam, J. Machacek *To appear on SIAM J. of Discrete Math.*

**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
- 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 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 2015. South Korea.
  - FPSAC 2013. France.
  - FPSAC 2012. Japan.

CONFERENCES,  
SEMINARS AND  
WORKSHOPS  
ATTENDED.

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-chair Scientific Committee ECCO'18 Colombian Combinatorial Meeting, Baranquilla 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.