

Laura Escobar

Department of Mathematics
University of Illinois at Urbana-Champaign
1409 W. Green Street
Urbana, IL 61801, USA

lescobar at illinois.edu
www.math.uiuc.edu/~lescobar

EMPLOYMENT

J.L. Doob Research Assistant Professor, U. of Illinois at Urbana-Champaign, USA
Supervisor: Alexander Yong 2015 - 2018
Postdoctoral Fellow, The Fields Institute thematic program in Combinatorial
Algebraic Geometry, Canada Fall 2016
Einstein Postdoctoral Researcher, TU Berlin, Germany Summer 2015
Supervisor: Bernd Sturmfels

EDUCATION

PhD in Mathematics, Cornell University 2015
Advisor: Allen Knutson
Master of Arts in Mathematics, San Francisco State University 2010
Advisor: Federico Ardila
Bachelors of Mathematics with a Minor in Japanese Language and Culture,
Universidad de los Andes 2008

RESEARCH INTERESTS

- Combinatorics
- Algebraic Geometry

PUBLICATIONS

- [1] Laura Escobar and Alexander Yong. Newton polytopes and symmetric Grothendieck polynomials. *arXiv:1705.07876*.
- [2] Laura Escobar and Allen Knutson. The multidegree of the multi-image variety, *submitted*. *arXiv:1701.03852*.
- [3] Laura Escobar, Oliver Pechenik, Bridget E. Tenner, and Alexander Yong. Rhombic tilings and Bott-Samelson varieties, *submitted*. *arXiv:1605.05613*.
- [4] Laura Escobar and Karola Mészáros. Toric matrix Schubert varieties and their polytopes. *Proc. Amer. Math. Soc.*, 144(12):5081–5096, 2016.
- [5] Laura Escobar and Karola Mészáros. Subword complexes via triangulations of root polytopes, *submitted*. *arXiv:1502.03997*.
- [6] Laura Escobar. Brick manifolds and toric varieties of brick polytopes. *Electron. J. Combin.*, 23(2):Paper 2.25, 18, 2016.
- [7] Laura Escobar. Bott-Samelson varieties, subword complexes and brick polytopes. In *26th International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2014)*, Discrete Math. Theor. Comput. Sci. Proc., AT, pages 863–874. Assoc. Discrete Math. Theor. Comput. Sci., Nancy, 2014.
- [8] Laura Escobar. Star¹-convex functions on tropical linear spaces of complete graphs. In *24th International Conference on Formal Power Series and Algebraic Combinatorics (FPSAC 2012)*, Discrete Math. Theor. Comput. Sci. Proc., AR, pages 709–720. Assoc. Discrete Math. Theor. Comput. Sci., Nancy, 2012.

GRANTS

- AMS Simons Travel Grant, 2017
- AWM Mentoring Travel Grant, 2017.

INVITED TALKS AND CONFERENCE PRESENTATIONS

- *University of Washington Combinatorics Seminar, Rhombic tilings and Bott-Samelson varieties*, April 2017; Seattle, WA.
- *AMS Special Session on Combinatorial and Computational Commutative Algebra and Algebraic Geometry, Rhombic tilings and Bott-Samelson varieties*, April 2017; Pullman, WA.
- *AMS Special Session on Algebraic and Enumerative Combinatorics with Applications, Rhombic tilings and Bott-Samelson varieties*, April 2017; Bloomington, IN.
- *University of Minnesota Combinatorics Seminar, Rhombic tilings and Bott-Samelson varieties*, March 2017; Minneapolis, MN.
- *University of Minnesota Student Combinatorics Seminar, Schubert varieties and combinatorics*, March 2017; Minneapolis, MN.
- *University of Miami Combinatorics Seminar, Rhombic tilings and Bott-Samelson varieties*, March 2017; Miami, FL.
- *University of Kentucky Discrete CATS Seminar, Resolutions of singularities of Schubert and Richardson varieties*, February 2017; Lexington, KY.
- *CMS Winter Meeting Session on Combinatorial Algebraic Geometry, The multidegree of the multi-image variety*, December 2016; Niagara Falls, ON.
- *CMS Winter Meeting Session on Equivariant Geometry and Topology, Torus orbits inside brick manifolds and matrix Schubert varieties*, December 2016; Niagara Falls, ON.
- *University of Toronto Geometric Representation Theory Seminar, Brick varieties and the toric variety of the associahedron*, October 2016; Toronto, ON.
- *The Fields Institute Seminar, Resolutions of singularities of Schubert and Richardson varieties*, August 2016, Toronto, ON.
- *Formal Power Series and Algebraic Combinatorics Poster Session, Toric matrix Schubert varieties and root polytopes*, July 2016; Vancouver, BC.
- *UIUC Algebraic Geometry Seminar, Brick varieties and the toric variety of the associahedron*, May 2016; Urbana-Champaign, IL.
- *AMS Special Session on Combinatorial Ideals and Applications, Toric matrix Schubert varieties*, April 2016; Fargo, ND.
- *AMS Special Session on Combinatorial and Computational Commutative Algebra and Algebraic Geometry, Toric matrix Schubert varieties*, April 2016; Salt Lake City, UT.
- *AWM Workshop at JMM 2016, Toric matrix Schubert varieties*, January 2016; Seattle, WA.
- *ALGECOM, Toric matrix Schubert varieties*, October 2015; Ann Arbor, MI.
- *Ohio State Algebraic Geometry Seminar, Brick varieties and the toric variety of the associahedron*, October 2015; Columbus, OH.
- *AMS Special Session on Algebraic Combinatorics, Realizing subword complexes via triangulations of root polytopes*, March 2015; East Lansing, MI.
- *AMS Special Session on Cluster Algebras, Toric varieties of associahedra*, January 2015; San Antonio, TX.
- *University of Michigan Commutative Algebra Seminar, Brick varieties and the toric variety of the associahedron*, December 2014; Ann Arbor, MI.
- *AMS Special Session on Generalized Catalan Algebraic Combinatorics, Toric varieties of associahedra*, October 2014; Halifax, Canada.
- *Formal Power Series and Algebraic Combinatorics Poster Session, Brick varieties and toric varieties of associahedra*, June 2014; Chicago, IL.
- *Encuentro Colombiano de Combinatoria, A history of the associahedron*, June 2014; Bogota, Colombia.
- *UC Berkeley Commutative Algebra and Algebraic Geometry Seminar, Bott-Samelson varieties, subword complexes and brick polytopes*, February 2014; Berkeley, CA.
- *York University Applied Algebra Seminar, Bott-Samelson varieties, subword complexes and brick polytopes*, October 2013; Toronto, Canada.
- *AWM Research Symposium, Special Session: Algebraic Combinatorics, Bott-Samelson Varieties, Subword Complexes and Associahedra*, March 2013; Santa Clara, CA.
- *Cornell University Computational and Commutative Algebra Seminar, A combinatorial strategy to solve the F-conjecture*, November 2012; Ithaca, NY.

- **York University Applied Algebra Seminar**, *A combinatorial strategy to solve the F-conjecture*, November 2012; Toronto, Canada.
- **Formal Power Series and Algebraic Combinatorics Poster Session**, *The combinatorics of the divisors on $\overline{M}_{0,n}$* , July 2012; Nagoya, Japan.
- **Kyoto University Workshop on Convex Polytopes**, *A combinatorial approach to the study of $\overline{M}_{0,n}$* , July 2012; Kyoto, Japan.
- **Encuentro Colombiano de Combinatoria**, *A combinatorial approach to the study of $\overline{M}_{0,n}$* , June 2012; Bogota, Colombia.
- **San Francisco State University Graduate Student Seminar**, *Tropical linear spaces*, Fall 2009; San Francisco, CA.

PROFESSIONAL SERVICE AND OUTREACH

- **Member of the organizing committee of Encuentro Colombiano de Combinatoria**; Colombia; Summer 2018, Summer 2016, Summer 2012.
- **Founder and Co-organizer of the Doob Colloquium**; University of Illinois at Urbana-Champaign; Spring 2017-Current.
- **Co-organizer of the Algebra, Geometry and Combinatorics Day (AlGeCom)**; University of Illinois at Urbana-Champaign; Spring 2017.
- **Co-organizer of the Algebra, Geometry and Combinatorics Seminar**; University of Illinois at Urbana-Champaign; Fall 2015-Current.
- **Co-organizer of the Special Seminar on NonLinear Algebra**; TU Berlin; June 2015.
- **Organizer of the Center for Talented Youth Family Saturday Program**; Cornell University; March 2015.
- **Workshop assistant for Louis Billera's course Matroids, geometric lattices, and arrangements of hyperplanes**; Encuentro Colombiano de Combinatoria; Summer 2014.
- **Designer and Leader of the Module Flat Objects and Optimization of the Math Explorers Club**; Cornell University; Fall 2012.
- **TA Trainer for Incoming Graduate Students**; Cornell University; Summers 2012-2014.
- **Presenter of Center for Talented Youth Family Saturday Program Tilings Workshop**; Cornell University; October 2011.
- **Co-organizer of the Toric Varieties Learning Seminar**; Cornell University; Fall 2011.
- **Organizer of Professors' Seminar**; San Francisco State University; October 2011.

SEMINAR LECTURES

- **Tropical Geometry Seminar**, University of California Berkeley; Berkeley, CA
 - *Tropical Grassmannian*, March 2014
- **Olivetti Seminar**, Cornell University; Ithaca, NY
 - *A history of the associahedron*, March 2015
 - *Schubert varieties*, March 2013
 - *Tropical linear spaces*, March, 2011
- **Workshop on Quantum/Affine Schubert Calculus**, Eugene, OR
 - *k-double Schur functions*, August 2013
- **Berstein Seminar**, Cornell University; Ithaca, NY
 - *Toric varieties*, March 2012
 - *Equivariant cohomology of toric varieties*, March 2012
- **Discrete Geometry and Combinatorics Seminar**, Cornell University; Ithaca, New York
 - *Symmetric functions II*, October 2011
- **Toric Varieties Learning Seminar**, Cornell University; Ithaca, New York
 - *Singularities and compactness of toric varieties*, October 2011

AWARDS AND HONORS

- **Teacher Ranked as Excellent**, University of Illinois at Urbana-Champaign, Fall 2015
- **Robert John Batting Graduate Prize**, for Excellence and Promise in Mathematics, Cornell University, 2014.

- **Department of Mathematics Teaching Award**, Cornell University, 2014.
- **Graduate Student Award for Distinguished Achievement**, San Francisco State University, 2010.
- **SFSU Alumni Association Graduate Scholarship**, San Francisco State University, Spring 2009.
- **Provost Scholarship**, San Francisco State University, 2008-2009.
- **Sylow Algebra Prize**, San Francisco State University, 2008-2009.
- **Lawrence Chang Memorial Scholarship Award**, San Francisco State University, Fall 2008, Fall 2009.
- **Beca Uniandinos**, Fall 2007, Spring 2008.

TEACHING EXPERIENCE

- **Instructor, University of Illinois at Urbana-Champaign**
 - Linear Programming: Spring 2017
 - Introduction to Combinatorics: Spring 2016
 - Introduction to Discrete Mathematics: Fall 2015
- **Instructor, Cornell University**
 - Calculus I: Fall 2013, Fall 2011
- **Teaching Assistant, Cornell University**
 - Graduate Algebra: Fall 2014, 2012
 - Applicable Algebra: Spring 2013, 2015
 - Algebra: Spring 2012, 2011
 - Calculus I for Engineers: Fall 2010
- **Instructor, San Francisco State University**
 - Algebra II: Fall 2008 - Spring 2010
- **Teaching Assistant, San Francisco State University**
 - Exploration and Proof: Spring 2010
 - Calculus I: Fall 2009
 - Modern Algebra II: Fall 2008
- **Instructor, Universidad de los Andes**
 - Calculus I: Spring 2008
- **Teaching Assistant, Universidad de los Andes**
 - Calculus II: Fall 2007

REFERENCES

Alexander Yong, Professor of Mathematics, UIUC ayong at math.uiuc.edu

Allen Knutson, Professor of Mathematics, Cornell University allenk at math.cornell.edu

Federico Ardila, Professor of Mathematics, SFSU federico at math.sfsu.edu