

Tristram Bogart

Basic Information

Birthdate: February 2, 1980

Citizenship: United States

Languages: English (native), Spanish (fluent)

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Education

Ph.D in Mathematics, University of Washington, September 2001–June 2007. Adviser: Rekha R. Thomas,

B.A. in Mathematics, August 1997–June 2001; graduated with high honors.

Budapest Semesters in Mathematics. Budapest, Hungary, January–May 2000.

Professional Experience

Associate Professor, Departamento de Matemáticas, Universidad de los Andes, February 2015–present.

Visiting Researcher, Mathematics Department, San Francisco State University, August–December 2017.

Assistant Professor, Departamento de Matemáticas, Universidad de los Andes, August 2011–January 2015.

NSF/MSRI Postdoctoral Fellow, Mathematics Department, San Francisco State University, August 2010–May 2011.

Coleman Postdoctoral Fellow, Department of Mathematics and Statistics, Queen's University, Kingston, Ontario, Canada, July 2007–June 2010.

Postdoctoral Fellow, Mathematical Sciences Research Institute, August–December 2009.

Research assistant at San Francisco State, 1 May – 20 June 2008.

Long-term Visitor, Institute for Mathematics and its Applications, Minneapolis, January–March 2007.

Refereed Publications and Preprints

1. Numerical semigroups via projections and via quotients (with Christopher O’Neill and Kevin Woods.) Accepted for publication in *Discrete and Computational Geometry*.
2. An Ehrhart theoretic approach to generalized Golomb rulers (with Daniel Felipe Cuéllar.) Submitted.
3. When is a numerical semigroup a quotient? (with Christopher O’Neill and Kevin Woods.) *Bulletin of the Australian Mathematical Society*, v.109 (1) 2024, pp. 67–76.
4. Bounds on determinantal complexity of two types of generalised permanents (with Juan Andrés Valero.) Submitted.
5. Complex psd-minimal polytopes in dimensions two and three (with João Gouveia and Juan Camilo Torres.) *Journal of Algebra and its Applications* v. 23 (2), 2024, article 2450025.
6. A plethora of polynomials: a toolbox for counting problems (with Kevin Woods.) *The American Mathematical Monthly* v. 129 (3), 2022, pp. 203–222.
7. An algebraic approach to projective uniqueness with an application to order polytopes (with João Gouveia and Juan Camilo Torres.) *Discrete and Computational Geometry* v. 67 (2), 2021, pp. 462–491.
8. Constructing partial MDS codes from reducible curves (with Anna-Lena Horlemann-Trautmann, David Karpuk, Alessandro Neri, and Mauricio Velasco.) *SIAM Journal on Discrete Mathematics* v. 35 (4), 2021, pp. 2946–2970.
9. Periodic behavior in families of numerical and affine semigroups via parametric Presburger arithmetic (with John Goodrick and Kevin Woods.) *Semigroup Forum* v. 102 (2), 2021, pp. 340–356..
10. The Parametric shortest and closest vector problems (with John Goodrick and Kevin Woods.) *SIAM Journal on Discrete Mathematics* v. 34 (4), 2020, pp. 2363–2387.
11. Parametric Presburger arithmetic: complexity of counting and quantifier elimination (with John Goodrick, Danny Nguyen, and Kevin Woods.) *Mathematical Logic Quarterly*, v. 65 (2), 2019, pp. 237–250.
12. An l-p switch trick to obtain a new elementary proof of a criterion for arithmetic equivalence (with Guillermo Mantilla-Soler.) *Research in Number Theory*, v. 5 (1), 2019, article 1.
13. Superlinear subset partition graphs with dimension reduction, strong adjacency, and endpoint-count (with Edward D. Kim.) *Combinatorica*, v. 38 (1), 2018, pp. 75–114.
14. Parametric Presburger arithmetic: logic, combinatorics, and quasi-polynomial behavior (with John Goodrick and Kevin Woods.) *Discrete Analysis*, 2017, #4.
15. A lower bound for the determinantal complexity of a hypersurface (with Jarod Alper and Mauricio Velasco.) *Foundations of Computational Mathematics*, v. 17 (3), 2017, pp. 829–836.
16. Finitely many smooth d -polytopes with n lattice points (with C. Haase, M. Hering, B. Lorenz, B. Nill, A. Paffenholz, G. Rote, F. Santos, and H. Schenck.) *Israel Journal of Mathematics*, v. 207 (1), 2015, pp. 301–329.
17. Hom-polytopes (with Mark Contois and Joseph Gubeladze.) *Mathematische Zeitschrift*, v. 272 (3–4), 2013, pp. 1267–1296.

18. Enumeration of Golomb Rulers and Acyclic Orientations of Mixed Graphs (with Matthias Beck and Tu Pham.) *Electronic Journal of Combinatorics* v. 19 (3), 2012, P42.
19. Universal Gröbner bases of colored partition identities (with Raymond Hemmecke and Sonja Petrović.) *Experimental Mathematics* v. 21 (4), 2012, pp. 395–401.
20. Obstructions to lifting tropical curves in surfaces in 3-space (with Eric Katz.) *Siam Journal on Discrete Mathematics*, v. 26 (3), 2012, pp. 1050–1067.
21. Riffs on the infinite ping-pong ball conundrum (with Ami Mamolo.) *International Journal of Mathematical Education in Science and Technology* v. 42 (5), 2011, pp. 615–623.
22. Small Chvátal rank (with Annie Raymond and Rekha Thomas.) *Mathematical Programming, Series B* v. 124 (1-2), 2010, pp. 45–68.
23. The circuit ideal of a vector configuration (with Anders Jensen and Rekha Thomas) *Journal of Algebra* v. 309 (2), 2007, pp. 518–542.
24. Computing tropical varieties (with Anders Jensen, David Speyer, Bernd Sturmfels, and Rekha Thomas.) *Journal of Symbolic Computation* v. 42, 2007, no. 1-2, pp. 54–73.

Grants, Scholarships, and Awards

Paul R. Halmos - Lester R. Ford Award for expository excellence (joint with Kevin Woods), 2023.

Proyecto de Investigación: *Parametric Approaches to Affine Semigroups and Chvatal Rank*, Los Andes, 2021-2023.

Proyecto de Investigación: *Morfismos de Polítopos*, Los Andes, 2018–2019.

Open Arms Travel Grant to attend the International Congress of Mathematicians, 2018.

Fondo de Apoyo para Profesores Asistentes (startup fund), Los Andes, 2012–2015.

AMS Math. Research Community: *Computational Algebra and Convexity*, 2008–2009.

University of Washington VIGRE fellowship, 2001–02 and 2004–05.

University of Washington Graduate School Merit Award, 2001.

Oberlin Rebecca Cary Orr Memorial Prize in Mathematics, 2001.

Invited Talks

Event	Location	Date
Congreso Colombiano de Matemáticas	UPTC, Tunja, Colombia	6 June 2023
Math Colloquium	U. de los Andes	10 April 2023
Math Colloquium	U. de los Andes	10 February 2022
Math. Congress of the Americas	virtual	13 July 2021
Algebra Seminar	U. Coimbra, Portugal	12 June 2019
Math Colloquium	U. de los Andes	24 January 2019
Encuentro Soc. Mat. Colombia–México	U. del Norte, Colombia	2 June 2018
Encuentro Soc. Mat. Colombia–México	U. del Norte, Colombia	1 June 2018
Einstein Workshop	Freie U. Berlin, Germany	13 March 2018
Lenora Lecture	Oberlin College	8 January 2018
Faculty Seminar	Oberlin College	5 January 2018
Math Colloquium	Seattle U.	5 October 2017
Math Colloquium	U. de los Andes	20 April 2017

Research Day	Fond. U. Konrad Lorenz, Colombia	23 March 2017
Minicourse on Algebraic Complexity	U. Andrés Bello, Chile	February 2017
Escuela de Física Matemática	U. de los Andes	24 May 2016
Joint Math. Meetings	Seattle	9 January 2016
Math Colloquium	U. del Cauca, Colombia	14 October 2015
Math Colloquium	U. de los Andes	10 September 2015
Math Colloquium	U. Javeriana	18 November 2014
ALTENCOA-6	Pasto, Colombia	12 August 2014
Combinatorics Seminar	U. Washington	15 January 2014
Algebra-Geometry-Combinatorics Seminar	San Francisco State	11 December 2013
XIX Congreso Colombiano de Matemáticas	Barranquilla, Colombia	July 2013
Optimization Seminar	Aarhus U., Denmark	21 June 2013
Escuela de Física Matemática	U. de los Andes	31 May 2013
Joint Mathematics Meetings	San Diego	21 January 2013
SIAM Annual Meeting	Minneapolis	10 July 2012
Math Colloquium	U. de los Andes	6 October 2011
Canadian Math. Soc. Summer Meeting	Edmonton	June 2011
SIAM Conference on Optimization	Darmstadt, Germany	19 May 2011
Algebraic Geometry Seminar	Saarbrücken, Germany	12 May 2011
Algebra and Discrete Mathematics Seminar	UC Davis	14 April 2011
Math Colloquium	Sonoma State	9 February 2011
Bay Area Discrete Math Day	UC Berkeley	16 October 2010
Gröbner Bases and the Industrial Society	Osaka, Japan	June 2010
Algebraic Geometry Seminar	Queen's U.	20 January 2010
Postdoctoral Seminar	MSRI	6 November 2009
Algebra & Number Theory Seminar	Heidelberg University	29 May 2009
Algebraic Geometry Seminar	Ohio State	17 February 2009
Joint Mathematics Meetings	Washington D.C.	7 January 2009
CMS Winter Meeting	Ottawa	7 December 2008
Route 81 Conference	Kingston, ON	18 October 2008
Algebraic Geometry Seminar	Queen's U.	6 October 2008
Computational Algebra and Convexity	Snowbird, Utah	22 June 2008
Algebra-Geometry-Combinatorics Seminar	San Francisco State	9 May 2008
Algebra Seminar	Univ. of Washington	8 April 2008
Algebraic Geometry Seminar	Queen's U.	24 September 2007
IMA Postdoc Seminar	U. Minnesota	13 February 2007
Combinatorics Seminar	UC Berkeley	13 November 2006
Combinatorics and Geometry Seminar	U. Washington	18 January 2006
Algebra-Geometry-Combinatorics Seminar	San Francisco State	21 October 2005
Current Problems Seminar	U. Washington	12 May 2005

Posters

Date	Location	Event
January 2025	Santander, Spain	Santander Workshop on Geom. and Alg. Combinatorics
June 2021	Seattle, WA, USA	Combin., Comput., and Appl. Alg. Geom.
June 2015	Trento, Italy	MEGA 2015
9-11 April 2010	Amherst, MA	Algebraic Geometry Northeastern Series
September 2006	Alcalá de Henares, Spain	Workshop on Geom. and Top. Combinatorics

Theses supervised

Name	Type	Completion Date	Topic
Juan Camilo Torres	Ph.D	December 2020	polytopes and algebra
Julián Pulido	masters	June 2020	polytopes
Juan Andrés Valero	masters	June 2019	algebraic complexity
Santiago Morales	undergraduate	December 2023	probabilistic combinatorics
Tatiana Aguirre	undergraduate	May 2023	polytopes
Daniel Alonso	undergraduate	May 2023	probabilistic combinatorics
Nicolás Maldonado	undergraduate	December 2022	polytopes
Daniel Cuéllar	undergraduate	December 2021	discrete geometry
Esteban Gutiérrez	undergraduate	July 2020	computational algebra
Camilo Escobar	undergraduate	June 2020	computational number theory
Julián Chitiva	undergraduate	December 2017	tropical geometry
Juan Camilo Azuero	undergraduate	June 2017	polytopes
Daniel Tamayo	undergraduate	June 2017	polytopes
Juan Pablo Henao	undergraduate	December 2015	algorithms
Daniel Ávila	undergraduate	June 2014	computational algebra
Jorge Alberto Olarte	undergraduate	June 2014	matroids
Federico Castillo	undergraduate	June 2012	tropical geometry

Courses Taught

Course	University	Last Offered
Discrete Algorithms	Los Andes	spring 2024
Linear algebra	Los Andes	spring 2024
Integral calculus	Los Andes	fall 2023
Number theory	Los Andes	fall 2023
Linear algebra (honors)	Los Andes	spring 2023
Probabilistic methods in combinatorics	Los Andes	fall 2022
Differential calculus	Los Andes	fall 2022
Honors probability	Los Andes	fall 2021
Commutative Algebra	Los Andes	spring 2021
Abstract algebra II	Los Andes	fall 2020
Enumerative combinatorics	Los Andes	spring 2020
Abstract Algebra 1	Los Andes	spring 2019
Computational complexity	Los Andes	autumn 2015
Foundations of mathematics	Los Andes	spring 2015
Differential equations	Los Andes	spring 2015
Permutation groups	Los Andes	autumn 2014
Algebraic combinatorics	Los Andes	spring 2014

Introduction to combinatorics	Los Andes	spring 2012
Calculus I	San Francisco State	autumn 2010
Linear algebra	Queen's	winter 2010
Linear algebra II	Queen's	winter 2009
Calculus I	Queen's	autumn 2008
Calculus for economics	Queen's	winter 2008
Linear algebra	Washington	spring 2007
Calculus III	Washington	spring 2006
Calculus I	Washington	summer 2003
Precalculus	Washington	spring 2003

Committee membership

Applied mathematics committee, Los Andes, March 2018–present.

Mathematics postgraduate committee, Los Andes, March 2018–December 2020 and June 2021–present.

Mathematics hiring committees, Los Andes, August 2016–June 2017, August 2018–June 2019, and August 2021–February 2022

Coordination

Graduate program coordinator, August 2023–present

Linear algebra course coordinator, August 2015–June 2016.

Mathematics colloquium coordinator, January 2013–December 2014.

Organizer of U. of Washington VIGRE examples seminar, winter and spring 2005.

Organizer of U. of Washington math department's current problems seminar, 2003–2004.

Conference Organization

Program committee for *48th International Symposium on Symbolic and Algebraic Computation (ISSAC) 2023*.

Local organizing committee for *7. Encuentro Colombiano de Combinatoria*, Universidad de los Andes and Universidad Sergio Arboleda, June 2022.

Scientific committee for *5. Encuentro Colombiano de Combinatoria*, Universidad Nacional de Colombia (Medellin), June 2016.

Lead local organizer for *4. Encuentro Colombiano de Combinatoria*, Los Andes, June 2014.

Scientific and local committees for *3. Encuentro Colombiano de Combinatoria*, Los Andes, June 2012.

Lead local organizer for *22nd Bay Area Discrete Math Day*. San Francisco State, 30 April 2010.

Local organizing committee for *Formal Power Series & Algebraic Combinatorics 2010*. San Francisco State, 2–6 August 2010.

Refereeing and Reviewing

External tenure reviewer for the University of Nevada, Las Vegas

Grant reviewer for Colciencias (Colombia), the National Security Agency (United States), and the Nueva Granada Military University (Colombia)

Referee for the book collection *Proceedings of Symposia in Applied Mathematics*

Referee for the journals *Algebraic Colloquium*, *Algebraic Combinatorics*, *The American Mathematical Monthly*, *Combinatorial Theory*, *Combinatorica*, *Discrete and Computational Geometry*, *Discrete Mathematics Letters*, *Electronic Journal of Combinatorics*, *Forum of Mathematics*, *Sigma International Journal of Algebra and Computation*, *International Transactions in Operational Research*, *Journal of Algebraic Combinatorics*, *Journal of Combinatorial Theory, Ser. A*, *Journal of Pure and Applied Algebra*, *Journal of Symbolic Computation*, *Lecturas Matemáticas*, *Mathematical Programming*, *Mathematics of Operations Research*, *The PUMP Journal of Undergraduate Research*, *Revista Integración*, and *SIAM Journal on Discrete Mathematics*.

Other Professional Activities

Guest lecturer in the course *Computational Algebra and Algebraic Geometry*, taught by Susan Colley at Oberlin College, 1–3 December 2008.

Assistant at the tutorial *Algebraic Algorithms in Optimization*, Institute for Mathematics and its Applications, Minneapolis, 12–13 January 2007.

Summer REU supervised by Vic Reiner. U. of Minnesota, June–July 2000.