

CURRICULUM VITAE

FEDERICO GALETTO

Contact Information.

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Education.

2009 - 2013 *Ph.D. in Mathematics*, Northeastern University
2007 - 2009 *M.S. in Pure Mathematics*, Northeastern University
2005 - 2008 *Laurea Magistrale in Matematica* (equivalent to M.S.), Università degli Studi di Torino
2001 - 2005 *Laurea in Scienze Matematiche* (equivalent to B.S.), Università degli Studi di Torino

Academic Positions.

2018 - present *Assistant Professor*, Cleveland State University, Cleveland, OH
2015 - 2018 *Postdoctoral Fellow*, McMaster University, Hamilton, ON
Fall 2016 *Visiting Researcher*, Fields Institute, Toronto, ON
2013 - 2015 *Coleman Postdoctoral Fellow*, Queen's University, Kingston, ON
2007 - 2013 *Teaching Assistant*, Northeastern University, Boston, MA

Research Interests.

Commutative and homological algebra, algebraic geometry
Computational methods and mathematical software

Refereed Papers.

- 2020 12. J. Biermann, H. De Alba, F. Galetto, S. Murai, U. Nagel, A. O'Keefe, T. Römer, A. Seceleanu. Betti numbers of symmetric shifted ideals, [arXiv:1907.04288](#). To appear in *Journal of Algebra*.
11. F. Galetto. On the ideal generated by all squarefree monomials of a given degree. *Journal of Commutative Algebra*, 12(2):199–215, 06 2020.

- 2019 10. F. Galetto, J. Hofscheier, G. Keiper, C. Kohne, A. Van Tuyl, and M. E. Uribe-Paczka. Betti numbers of toric ideals of graphs: a case study. *Journal of Algebra and its Applications*, 18(12):1950226, 14, 2019.
9. F. Galetto, A. V. Geramita, Y.-S. Shin, and A. Van Tuyl. The symbolic defect of an ideal. *Journal of Pure and Applied Algebra*, 223(6):2709–2731, 2019.
8. F. Galetto, A. V. Geramita, and D. L. Wehlau. Degrees of regular sequences with a symmetric group action. *Canadian Journal of Mathematics*, 71(3):557–578, 2019.
- 2018 7. H. Abe, L. DeDieu, F. Galetto, and M. Harada. Geometry of Hessenberg varieties with applications to Newton-Okounkov bodies. *Selecta Mathematica (New Series)*, 24(3):2129–2163, 2018.
6. F. Galetto, A. V. Geramita, and D. L. Wehlau. Symmetric complete intersections. *Communications in Algebra*, 46(5):2194–2204, 2018.
- 2017 5. F. Galetto, Y.-S. Shin, and A. Van Tuyl. Distinguishing \mathbb{k} -configurations. *Illinois Journal of Mathematics*, 61(3-4):415–441, 2017.
4. F. Galetto. Generators of truncated symmetric polynomials. *Journal of Pure and Applied Algebra*, 221(2):276–285, 2017.
- 2016 3. F. Galetto. Propagating weights of tori along free resolutions. *Journal of Symbolic Computation*, 74:1–45, 2016.
- 2015 2. F. Galetto. Free resolutions and modules with a semisimple Lie group action. *Journal of Software for Algebra and Geometry*, 7(1):17–29, 2015.
- 2014 1. F. Galetto. Computational methods for orbit closures in a representation with finitely many orbits. *Experimental Mathematics*, 23(3):310–321, 2014.

Unpublished Papers.

- 2012 1. F. Galetto. Free resolutions of orbit closures for the representations associated to gradings on Lie algebras of type E_6 , F_4 and G_2 , arXiv:1210.6410 (preprint of my doctoral dissertation; an excerpt of this paper was published in my 2014 article “Computational methods for orbit closures in a representation with finitely many orbits”)

Expository Papers.

- 2018 1. F. Galetto. Betti numbers with a dash of representations. *Canadian Mathematical Society Notes*, 50(1):16, 2018.

Dissertations and Theses.

- 2013 *Free resolutions of orbit closures for representations with finitely many orbits*, Ph.D. Thesis, Northeastern University, supervised by J. Weyman
- 2008 *Metodi omologici con applicazioni alla teoria degli anelli locali*, Tesi di Laurea Magistrale, Università degli Studi di Torino, supervised by M. Roggero
- 2005 *Curve ellittiche*, Tesi di Laurea, Università degli Studi di Torino, supervised by M. Roggero

Invited Talks.

- 2020 Oct *TBA*, AMS Sectional Meeting, Special Session on Commutative Algebra and Connections to Algebraic Geometry and Combinatorics, Pennsylvania State University, University Park Campus
- May *Representations with finitely many orbits and free resolutions*, Algebra Seminar, Jagiellonian University
- Mar *Betti numbers and equivariant free resolutions of star configurations*, Algebra/Combinatorics/Geometry Seminar, University of Pittsburgh
- 2019 Dec *Tangent schemes of determinantal varieties*, CMS Meeting, Scientific Session on Commutative Algebra, Toronto, ON
- 2018 Dec *Betti numbers of symbolic powers of star configurations*, CMS Meeting, Scientific Session on Symbolic and Regular Powers of Ideals, Vancouver, BC
- Mar *Towards Newton-Okounkov bodies of Hessenberg varieties*, AMS Sectional Meeting, Special Session on Convex Bodies in Algebraic Geometry and Representation Theory, Ohio State University
- Mar *The symbolic defect of an ideal*, AMS Sectional Meeting, Special Session on Commutative and Combinatorial Algebra, Ohio State University
- 2017 Dec *Distinguishing k -configurations*, CMS Meeting, Scientific Session on Applications of Combinatorial Topology in Commutative Algebra, Waterloo, ON
- Oct *Distinguishing k -configurations*, Mathematics Colloquium, Dalhousie University
- Apr *Towards Newton-Okounkov bodies of Hessenberg varieties*, AMS Sectional Meeting, Special Session on Combinatorial and Computational Commutative Algebra and Algebraic Geometry, Washington State University
- 2016 Sep *Equivariant resolutions of De Concini-Procesi ideals*, AMS Sectional Meeting, Special Session on Combinatorial Aspects of Nilpotent Orbits, Bowdoin College
- May *Symmetric complete intersections*, Algebra & Geometry Seminar, Università degli Studi di Genova
- Apr *Symmetric complete intersections*, AMS Sectional Meeting, Special Session on Commutative Algebra and Its Interactions with Combinatorics and Algebraic Geometry, North Dakota State University
- Apr *Equivariant resolutions of De Concini-Procesi ideals*, Algebra Seminar, University of Nebraska - Lincoln
- Apr *An introduction to equivariant free resolutions*, Algebra Seminar, University of Nebraska - Lincoln
- Mar *Symmetric complete intersections*, AMS Sectional Meeting, Special Session on Combinatorial and Computational Algebra, University of Georgia
- 2015 Oct *Tangent schemes of determinantal varieties*, Geometry & Topology Seminar, McMaster University
- Jan *On a family of equivariant resolutions*, Joint Mathematics Meetings, Special Session on Syzygies, San Antonio, TX
- 2014 Dec *Equivariant resolutions of De Concini-Procesi ideals*, Welcome Home Workshop, Università degli Studi di Torino
- Nov *Equivariant resolutions of De Concini-Procesi ideals*, Geometric Methods in Representation Theory, University of Iowa
- Oct *Equivariant resolutions of De Concini-Procesi ideals*, AMS Sectional Meeting, Special Session on Commutative Algebra and Its Interactions with Algebraic Geometry, Dalhousie University
- Aug *An algorithm for determining actions of semisimple Lie groups on free resolutions*, Applications of Computer Algebra, Fordham University

- Jan *An algorithm for determining actions of semisimple Lie groups on free resolutions*, Department Colloquium, Queen's University
- 2013 Sep *Free resolutions and representations with finitely many orbits*, Algebraic Geometric Seminar, Queen's University
- Feb *Representations with finitely many orbits and free resolutions*, Representation Theory, Homological Algebra, and Free Resolutions, MSRI
- Jan *Representations with finitely many orbits and free resolutions*, Geometry Seminar, Texas A&M University
- 2012 Nov *Representations with finitely many orbits and free resolutions*, Commutative Algebra & Algebraic Geometry Seminar, City University of New York, Graduate Center
- Nov *Representations with finitely many orbits and free resolutions*, Geometric Methods in Representation Theory, University of Missouri, Columbia
- 2011 Dec *Risoluzioni libere di ideali determinantal*, Welcome Home Workshop, Università degli Studi di Torino

Conference and Seminar Talks.

- 2020 Jan *Symmetric shifted ideals*, Combinatorial Algebra meets Algebraic Combinatorics, Dalhousie University
- 2019 Oct *Betti numbers, linear quotients, and star configurations*, Topology, Geometry & Algebra Seminar, Cleveland State University
- Apr *The symbolic defect of an ideal*, Topology, Geometry & Algebra Seminar, Cleveland State University
- 2017 Oct *Equivariant resolutions of De Concini-Procesi ideals*, Dalhousie University
- Sep *Distinguishing k -configurations*, Algebra Seminar, McMaster University
- Mar *Regular sequences and symmetric group actions*, Algebra Seminar, McMaster University
- 2016 Oct *Geometric technique for syzygies*, Thematic Program on Combinatorial Algebraic Geometry, Fields Institute
- Oct *An example of an equivariant free resolution of a monomial ideal*, Thematic Program on Combinatorial Algebraic Geometry, Fields Institute
- 2015 Nov *An overview of Boij-Soederberg theory*, Algebra Seminar, McMaster University
- 2014 Nov *Equivariant resolutions of De Concini-Procesi ideals*, Algebra Seminar, Loyola University Chicago
- Jan *An algorithm for determining actions of semisimple Lie groups on free resolutions*, Combinatorial Algebra meets Algebraic Combinatorics, Dalhousie University
- 2012 Nov *Representations with finitely many orbits and free resolutions*, Cornell Workshop on Syzygies, Cornell University
- Feb *Algorithms for irreducible decomposition of monomial ideals*, Graduate Student Seminar, Northeastern University
- Feb *Equivariant criteria for exactness and reducedness*, Quivers and Invariant Theory Seminar, Northeastern University
- Jan *Free resolutions of orbit closures for representations with finitely many orbits*, Combinatorial Algebra meets Algebraic Combinatorics, Université du Québec à Montréal
- 2011 Sep *Free resolutions of orbit closures for representations with finitely many orbits*, Route 81, Cornell University
- Apr *Orbit closures for the representations associated to graded Lie algebras: an interactive approach*, Maurice Auslander International Conference, Woods Hole Marine Biology Laboratory

- Feb *Generalized Tanisaki Ideals and the Cohomology of Hessenberg Varieties*, Graduate Student Seminar, Northeastern University
- 2009 Dec *Grassmannians and Cluster Algebras*, Topics in Representation Theory, Northeastern University
- May *An Introduction to Hodge Algebras*, Tapas Seminar, Northeastern University

Conference Attendance.

- 2020 May Macaulay2 Workshop at Cleveland State University
- Apr CAZoom
- 2019 Aug Structure of length 3 resolutions workshop, University of California San Diego
- Jul SageMath and Macaulay2 - An Open Source Initiative, IMA
- Jun Conference on Commutative Algebra and its Interaction with Algebraic Geometry In Honor of Bernd Ulrich, University of Notre Dame
- 2018 Sep Route 81, Syracuse University
- Jun Combinatorial Algebraic Geometry Retrospective Workshop, Fields Institute
- Jun Graduate Summer School in Algebraic Group Actions, McMaster University
- Apr Macaulay2 Workshop at Wisconsin, University of Wisconsin - Madison
- Jan Combinatorial Algebra meets Algebraic Combinatorics, McMaster University
- Jan Joint Mathematics Meetings, San Diego, CA
- 2017 May Ordinary and Symbolic Powers of Ideals, BIRS-CMO
- Jan Joint Mathematics Meetings, Atlanta, GA
- 2016 Dec CMS Meeting, Scientific Session on Recent Advances in Commutative Algebra, Niagara Falls, ON
- Fall Thematic Program on Combinatorial Algebraic Geometry, Fields Institute
- Apr Free Resolutions, Representations, and Asymptotic Algebra, BIRS
- Jan Combinatorial Algebra meets Algebraic Combinatorics, University of Western Ontario
- 2015 Oct Route 81, Queen's University
- Oct AMS Sectional Meeting, Loyola University Chicago
- Jan Combinatorial Algebra meets Algebraic Combinatorics, Queen's University
- 2014 Nov Symbolic and Numerical Methods for Tensors and Representation Theory, Simons Institute, University of California Berkeley
- Jun Macaulay2 Research Meeting and School, University of Illinois at Urbana-Champaign
- 2013 Nov Route 81, Syracuse University
- May Maurice Auslander International Conference, Woods Hole Oceanographic Institute
- Jan Joint Mathematics Meetings, San Diego, CA
- 2012 Aug Macaulay2 Developer's Workshop, Wake Forest University
- Jun MRC: Geometry and Representation Theory Related to Geometric Complexity and Other Variants of P v. NP, Snowbird, UT
- May PASI: Commutative Algebra and Its Interactions with Algebraic Geometry, Representation Theory, and Physics, CIMAT
- Apr Maurice Auslander International Conference, Woods Hole Oceanographic Institute
- Apr Interactions between Commutative Algebra and Representation Theory, Syracuse University
- 2011 Nov Commutative Algebra and Algebraic Geometry Conference, University of Illinois at Urbana-Champaign
- Jun Commutative Algebra Summer Graduate School, MSRI
- May Geometry of Orbit Closures, Università degli Studi di Roma "Tor Vergata"
- 2006 Aug Scuola Matematica Interuniversitaria, Università degli Studi di Perugia

Teaching Experience.

| Year | Term | Course No. | Title | Enrolled | Institution |
|---------|-----------|--------------|---|----------|-------------|
| 2019-20 | Spring | MTH 493/593 | Computational Commutative Algebra | 16 | CSU |
| | Spring | MTH 220 | Introduction to Discrete Mathematics | 34 | CSU |
| | Fall | MTH 358 | Abstract Algebra | 13 | CSU |
| | Fall | MTH 220 | Introduction to Discrete Mathematics | 35 | CSU |
| 2018-19 | Spring | MTH 482/582 | Topics in Number Theory | 13 | CSU |
| | Spring | MTH 220 | Introduction to Discrete Mathematics | 34 | CSU |
| | Fall | MTH 333 | Geometry | 25 | CSU |
| | Fall | MTH 514 | Linear Algebra/Functions of Several Variables | 11 | CSU |
| 2017-18 | Winter | MATH 3V03 | Graph Theory | 48 | McMaster |
| | Winter | MATH 1AA3 | Calculus for Science II (joint with 1ZB3) | 55 | McMaster |
| | Winter | MATH 1ZB3 | Engineering Mathematics II-A | 82 | McMaster |
| | Fall | MATH 3B03 | Geometry | 26 | McMaster |
| 2016-17 | Summer | MATH 2R03 | Linear Algebra II | 46 | McMaster |
| | Winter | MATH 702 | Algebra II (graduate) | 10 | McMaster |
| 2015-16 | Summer | MATH 2R03 | Linear Algebra II | 55 | McMaster |
| | Fall | MATH 1A03 | Calculus for Science I | 206 | McMaster |
| 2014-15 | Winter | MATH 281 | Introduction to Real Analysis | 110 | Queen's |
| | Winter | APSC 171-900 | Calculus I | 63 | Queen's |
| 2013-14 | Winter | MATH 281 | Introduction to Real Analysis | 108 | Queen's |
| | Fall | APSC 171 | Calculus I | 233 | Queen's |
| 2012-13 | Spring | MATH 1215 | Mathematical Thinking | 38 | NEU |
| | Fall | MATH 1215 | Mathematical Thinking | 23 | NEU |
| 2011-12 | Spring | MATH 1215 | Mathematical Thinking | 32 | NEU |
| | Fall | MATH 1215 | Mathematical Thinking | 47 | NEU |
| 2010-11 | Summer II | MATH 1215 | Mathematical Thinking | 23 | NEU |
| | Fall | MATH 1341 | Calculus I for Sci/Engr | 20 | NEU |
| 2009-10 | Summer I | MATH 1215 | Mathematical Thinking | 15 | NEU |
| | Spring | MATH 1341 | Calculus I for Sci/Engr | 21 | NEU |
| | Fall | MATH 1341 | Calculus I for Sci/Engr | 30 | NEU |
| 2008-09 | Spring | MTH U241 | Calculus I for Sci/Engr | 28 | NEU |
| | Fall | MTH U241 | Calculus I for Sci/Engr | 25 | NEU |
| 2007-08 | Summer I | MTH U131 | Calculus for Business and Economics | 23 | NEU |
| | Spring | MTH U241 | Calculus I for Sci/Engr | 28 | NEU |
| | Fall | MTH U341 | Calculus III for Sci/Engr (Recitations) | N/A | NEU |

Referee Service.

Algebra & Number Theory
 Journal of Algebra and its Applications (x2)
 Journal of Commutative Algebra
 Journal of Software for Algebra and Geometry (x2)
 Journal of Symbolic Computation
 Proceedings of the American Mathematical Society
 Rocky Mountain Journal of Mathematics
 The Electronic Journal of Combinatorics

Departmental Service.

- 2020 Undergraduate Assessment Committee, Cleveland State University
- 2019 CSU Freshman-Sophomore Mathematics Competition
- 2018 - 2020 Graduate Program Committee, Cleveland State University
- 2018 - 2020 Peer Review Committee - Appointments Lecturer, Cleveland State University
- 2012 - 2013 Mathematics Graduate Student Association, Northeastern University
- 2012 - 2013 Teaching Committee, Department of Mathematics, Northeastern University

External Service.

- 2020 Organizer of Macaulay2 Workshop at Cleveland State University
- 2019 - present Reviewer for AMS Mathematical Reviews (x2)
- 2016 Co-organizer (with S. Faridi and A. Van Tuyl) of the Scientific Session on Recent Advances in Commutative Algebra at the 2016 CMS Winter Meeting in Niagara Falls, ON

Affiliations.

- 2015 - present Member of the American Mathematical Society

Professional Development.

- 2019 Safe Space Program, Cleveland State University
- 2017 H.E.A.R.T. (Human rights, Equity, Accessibility, Respect Toolkit) Workshop Series, McMaster University
- 2013 - 2015 Positive Space Program, Queen's University