# CURRICULUM VITAE

FEDERICO GALETTO

## Contact Information.


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| Website | math.galetto.org |


## Education.

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| 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.

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|---|---|
| 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.

2019 11. F. Galetto, J. Hofscheier, G. Keiper, C. Kohne, M.E. Uribe-Paczka, and A. Van Tuyl. Betti numbers of toric ideals of graphs: A case study, `arXiv:1807.02154`. To appear in *Journal of Algebra and its Applications*.

10. F. Galetto. On the ideal generated by all squarefree monomials of a given degree, `arXiv:1609.06396`. To appear in *Journal of Commutative Algebra*.

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*, page 1–22, 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.

**Preprints.**

2019 1. F. Galetto, G.G. Smith, J. Weyman. Tangent schemes of determinantal varieties (in preparation)

**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.**

2018 Dec *Betti numbers of symbolic powers of star configurations*, CMS Meeting, Scientific Session on Symbolic and Regular Powers of Ideals, Vancouver, BC

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| | 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 determinantali*, Welcome Home Workshop, Università degli Studi di Torino

**Conference and Seminar Talks.**

2019 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.**

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

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| | 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 |
|---|---|---|---|---|---|
| 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 |

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| 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 |

**Refereeing.**

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| 2017 | Journal of Symbolic Computation |
| 2016 | Proceedings of the American Mathematical Society |
| 2012 - 2017 | Journal of Software for Algebra and Geometry (x2) |

**Service.**

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

**Affiliations.**

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| 2015 - present | Member of the American Mathematical Society |

**Professional Development.**

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| 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 |