Eloísa Grifo | CV

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Appointments

University of Nebraska-Lincoln   **Lincoln, Nebraska**
○ *Associate Professor*   *since Fall 2025*
Assistant Professor   *2021 – 2025*

University of California, Riverside   **Riverside, California**
○ *Assistant Professor*   *July 2020 – June 2021*
Visiting Assistant Researcher   *July 2019 – June 2020*

University of Michigan   **Ann Arbor, Michigan**
○ *Postdoctoral Assistant Professor*   *August 2018 – May 2019*

Long term visits

SLMath (formerly known as MSRI)   **Berkeley, California**
○ *Research Member*   *January 2024 – May 2024*

University of Utah   **Salt Lake City, Utah**
○ *Visiting Postdoctoral Scholar*   *July 2019 – June 2020*

Education

University of Virginia   **Charlottesville, VA, USA**
○ *PhD, Advisor: Craig Huneke*   *August 2013 – May 2018*
Thesis: *Symbolic powers and the Containment Problem*

Instituto Superior Técnico   **Lisboa, Portugal**
○ *Mestrado em Matemática e Aplicações (MS in Mathematics)*   *2011–2013*
Licenciatura em Matemática Aplicada e Computação (BS in Mathematics)   *2008–2011*

Publications

Published or accepted papers..

1. *Bounds on cohomological support varieties*, with Benjamin Briggs and Josh Pollitz, *Trans. Amer. Math. Soc* Ser. B 11 (2024), 703–726.

2. *Expected resurgence of ideals defining Gorenstein rings*, with Craig Huneke and Vivek Mukundan, *Michigan Math Journal*, 73 (2023), no. 4, 735–749.

3. *Symbolic power containments in singular rings in positive characteristic*, with Linquan Ma and Karl Schwede, *Manuscripta Mathematica* 170 (2023), no. 3-4, 471-496.

4. *A uniform Chevalley theorem for direct summands of polynomial rings in mixed characteristic*, with Alessandro De Stefani and Jack Jeffries, *Math. Z.* 301 (2022), no. 4, 4141–4151.

5. *Demailly's conjecture and the containment problem*, with Sankhaneel Bisui, Huy Tài Hà, and Thái Thành Nguyễn, *J. Pure Appl. Algebra* 226 (2022), no. 4.

6. *Constructing non-proxy small test modules for the complete intersection property*, with Benjamin Briggs and Josh Pollitz, *Nagoya Mathematical Journal* 246 (2022), 412–429.

7. *Chudnovsky's Conjecture and the stable Harbourne–Huneke containment*, with Sankhaneel Bisui, Huy Tài Hà, and Thái Thành Nguyễn, *Trans. Amer. Math. Soc. Ser. B* 9 (2022), 371–394.

8. *Local cohomology and Lyubeznik numbers of F-pure rings*, with Alessandro De Stefani and Luis Núñez-Betancourt, *J. Algebra* 571 (2021), 316–338.

9 *Lower bounds on betti numbers*, with Adam Boocher. In: I. Peeva (editor), *Commutative Algebra*, Springer, Cham (2021).

10 *Symbolic Rees algebras*, with Alexandra Seceleanu. In: I. Peeva (editor), *Commutative Algebra*. Springer, Cham (2021).

11 *Symbolic powers*, CIM Bulletin 43 (2021), 3-10.

12 *A stable version of Harbourne's Conjecture and the containment problem for space monomial curves*, J. Pure Appl. Algebra, Volume 224, Issue 12, 2020.

13 *A Zariski-Nagata Theorem for smooth $\mathbb{Z}$-algebras*, with Alessandro De Stefani and Jack Jeffries, *J. Reine Angew. Math.* 2020 (761), 123-140.

14 *Expected resurgences and symbolic powers of ideals*, with Craig Huneke and Vivek Mukundan, J. London Math. Soc. (2) 102 (2020) 453-69.

15 *Symbolic powers of ideals defining F-pure and strongly F-regular rings*, with Craig Huneke, *Int. Math. Res. Not. (IMRN)* 2019, no. 10, 2999–3014.

16 *Symbolic powers of ideals*, with Hailong Dao, Alessandro De Stefani, Craig Huneke, and Luis Núñez Betancourt, *Advances in Singularities and Foliations: Geom., Top. and Applications*, 2018, 387–432.

17 *Calculations involving symbolic powers*, with Ben Drabkin, Alexandra Seceleanu, and Branden Stone, J. Softw. Algebra Geom. 9 (2019), no. 1, 71–80.

18 *Lower bounds on projective levels of complexes*, with Hannah Altmann, Jonathan Montaño, William Sanders, and Thanh Vu, *Journal of Algebra*, 491C (2017), pp. 343–356.

19 *On the growth of deviations*, with Adam Boocher, Alessio D'Alì, Jonathan Montaño, and Alessio Sammartano, *Proc. Amer. Math. Soc.*, 144 (2016), pp. 5049–5060.

20 *Edge ideals and DG algebra resolutions*, with Adam Boocher, Alessio D'Alì, Jonathan Montaño, and Alessio Sammartano, *Le Matematiche* 70 (2015), no. 1, 215–237.

Preprints under review...

21 *The embedded deformation problem for monomial ideals*, with Ben Briggs and Josh Pollitz, arXiv:2506.10827.

22 *Differential and symbolic powers of ideals*, with Alessandro De Stefani and Jack Jeffries, arXiv:2503.21754.

23 *The software package SpectralSequences*, with Adam Boocher and Nathan Grieve, arXiv:1610.05338.

Other...

o *Números, cirurgias e nós de gravata* (book), co-edited with João Pedro Boavida, Luís Cruz-Filipe, Rui Pedro Carpentier, Pedro S. Gonçalves, David Henriques, Ana Rita Pires, IST Press, December 2012.

o *Da plasticina às equações de 5° grau* in *Números, cirurgias e nós de gravata*, pp. 12-25, IST Press, 2012.

Awards and Fellowships

Research and travel grants..

o NSF CAREER grant DMS-2236983, *Problems in Commutative and Homological Algebra*, 2023–2028.

o NSF RTG grant DMS-2342256, *Commutative Algebra at Nebraska*, 2024–2029, co-PI.
(PI: M. Walker. Co-PIs: B. Harbourne, J. Jeffries, A. Seceleanu. Senior personnel: T. Marley.)

o NSF grant DMS-2001445/2140355, *Symbolic powers and p-derivations*, 2020–2023.

o AMS–Simons Travel Grant, 2018–2020. Individual grant, $4,000.

o *Fundação para a Ciência e Tecnologia* grant, October 2012 – April 2013, advised by M. Cristina Câmara.

Conference grants...

o NSF grant DMS-2318072, *Nebraska Conference for Undergraduate Women in Math*, 2023-2026, co-PI.

o NSA conference grant, *Nebraska Conference for Undergraduate Women in Mathematics*, co-PI.
(For both grants above: PI: Alex Zupan. Co-PIs: Huijing Du, Eloísa Grifo, Christine Kelley.)

Fellowships...

o William and Carolyn Polk Jefferson Fellowship, 2013–2018, by the Jefferson Scholars Foundation.

o *Novos Talentos em Matemática*, awarded by Fundação Calouste Gulbenkian, 2008–09 and 2009–10.

- 2023 Harold & Esther Edgerton Junior Faculty Award.
- 2022 Roger Wiegand Award for contributions to the Nebraska Math Graduate Program.
- Honorable Mention in the International Mathematical Olympiads, 2008.
- Member of the portuguese team in the Ibero-american Mathematical Olympiads, 2007.
- Bronze (2003) and Gold (2008) medals in *Olimpíadas Portuguesas de Matemática*
- Gold (2004, 2006), Silver (2007) and Bronze (2005) medals in *Olimpíada Paulista de Matemática*
- Bronze Medal in *Olimpíada de Mayo* 2003 (international mathematical olympiad)
- Winner of *Campeonato Nacional da Língua Portuguesa* 2007, Category B (grammar competition)

Students

PhD students...

- Ryan Watson, current student
- Sabrina Fowler, current student
- Julianne Faur, current student
- Robert Ireland, current student
- Kesavan Mohana Sundaram, co-advised with Jack Jeffries, current student

Undergraduate students...

- Kolton O'Neal, Undergraduate Honors Thesis at UNL, co-advised with Mark Walker. BSc Spring'25.
- Uyen Tran, REU at UNL, Summer 2022, co-mentored with Jack Jeffries.
- Fangu Chen and Alan Tang, REU at UMich, 2019, co-advised with Jack Jeffries and Eric Canton.

Teaching

University of Nebraska – Lincoln...

- Introduction to Modern Algebra I (Math 817): Fall 2024
- Introduction to Modern Algebra II (Math 818): Spring 2023
- Homological Algebra (Math 915): Fall 2023
- Commutative Algebra I (Math 905): Fall 2022
- Commutative Algebra II (Math 906): Spring 2026
- Introduction to Mathematical Proofs (Math 309): Fall 2022, Fall 2023, Fall 2024, Fall 2025
- Topics in Algebra (Math 918): Spring 2022 (Symbolic powers)
- Introduction to Modern Algebra (Math 310): Fall 2021
- Linear Algebra (Math 314): Fall 2021, Fall 2025

University of California, Riverside...

- Introduction to Homological Algebra (Math 224): Spring 2021
- Commutative Algebra (Math 225): Winter 2021
- Calculus for the Life Sciences II (Math 7B): Fall 2020

University of Michigan..

- Introduction to Modern Algebra (Math 412): Winter 2019
- Calculus I (Math 115): Fall 2018

University of Virginia...

- Calculus II (instructor): Fall 2016
- Applied Calculus II (instructor): Spring 2015, Fall 2015
- Applied Calculus II (assistant to the coordinator): Spring 2016
- Calculus III (TA): Fall 2014

Instituto Superior Técnico..

- Análise Complexa e Equações Diferenciais (TA): Fall 2011, Spring 2012

Selected invited talks

- *Homological Methods in CA*, NCMW School on recent developments in CA, IIT Dharwad (June 2025)
- *Symbolic Powers*, ICTP Graduate course on tight closure of ideals and its applications (July 2022)
- *Symbolic Powers*, BRIDGES, University of Utah (July 2021)
- *Potencias simbólicas*, *Escuela de Outoño en Álgebra Conmutativa*, CIMAT, Mexico (November 2019)
- *Symbolic Powers*, in *Topics in commutative algebra*, RTG Mini-course, University of Utah (May 2018)

Seminars and conference talks

- AMS Special Session Sectional Meeting in St Louis (10/19/2025)
- Modules and Rings: a conference in honor of Marilina Rossi (06/16/2025)
- Special Session at the AWM Symposium (05/16/2025)
- Syracuse University Commutative Algebra Seminar (03/07/2025)
- *Betti numbers in CA and equivariant homotopy theory*, Bielefeld University, Germany (09/23/2024)
- New Directions in Group Theory and Triangulated Categories (zoom seminar) (05/02/2024)
- Western Algebraic Geometry Symposium, UC Davis (04/27/2024)
- UC Santa Cruz Math Department Colloquium (02/29/2024)
- Connections Workshop: Commutative Algebra, MSRI/SLMath (01/18/2024)
- Global Portuguese Mathematicians, Universidade de Coimbra, Portugal (07/28/2023)
- 3rd Women in Mathematics Meeting, Universidade de Coimbra, Portugal (07/26/2023)
- MSRI Summer School on CA and its Interaction with AG (05/31/2023)
- *Celebrando a Mulher na Matemática*, Zoom conference based in Brasil (05/22/2023)
- Annual New York State Regional Graduate Mathematics Conference (04/01/2023)
- AMS Special Session Sectional Meeting in Cincinnati (03/23/2023)
- AMS Special Session Sectional Meeting in Atlanta (03/19/2023)
- University of Minnesota Commutative Algebra Seminar (03/03/2023)
- Oberwolfach Workshop on *Resolutions in Local Algebra and Singularity Theory* (02/10/2023)
- Conference in honor of Bruns and Herzog, Osnabrück (06/15/2022)
- BIRS-CMO workshop on *Advances in mixed characteristic* (05/10/2022)
- KUMUNU, UNL (05/07/2022)
- CA+, Iowa State (05/01/2022)
- CUNY virtual Commutative Algebra and Algebraic Geometry Seminar (04/01/2022)
- UCR Algebraic Geometry Seminar (01/25/2022)
- Combinatorial Algebra meets Algebraic Combinatorics (01/22/2022)
- AMS Virtual Sectional Meeting in Albuquerque (10/23/2021)
- AMS Omaha Virtual Sectional Meeting (10/09/2021)
- IIT Bombay Virtual Commutative Algebra Seminar (09/03/2021)
- D-modules, group actions, and Frobenius, ICERM (08/12/2021)
- Differentials Operators in CA and AG, MCA 2021 (07/15/2021)
- Special Month On Singularities & K-Stability (06/07/2021)
- Virtual Notre Dame AG/CA Seminar (04/27/2021)
- AMS Special Session Virtual Sectional Meeting Cincinnati (04/17/2021)
- AMS Special Session Virtual Sectional Meeting at Brown (03/20/2021)
- Mulheres Matemáticas: uma tarde de encontro (01/2021)
- AMS Special Session Virtual Sectional Meeting at Penn State (10/04/2020)
- Fellowship of the ring (online seminar) (05/20)
- Bern/Fribourg/Neuchâtel Seminar (online) (05/15/2020)
- Tulane Math Colloquium (02/13/2020)
- Tulane Algebra Seminar (02/12/2020)

- UNL Colloquium (01/13/2020)
- UIC Commutative Algebra seminar (01/11/2019)
- UNL CA seminar (09/2019)
- University of Wisconsin Alg and AG Seminar (05/19/2019)
- Morgantown Algebra Days (04/2019)
- Central Michigan Alg & Combinatorics Sem (03/29/2019)
- UC Riverside Colloquium (02/21/2019)
- Overwolfach Workshop on *Singularities and Homological Aspects of Commutative Algebra* (10/02/2019)
- Oklahoma State University Colloquium (02/04/2019)
- Frobenius Actions in Commutative Algebra: Recent Developments, Barcelona, Spain (01/2019)
- CMS Winter Meeting, Vancouver, Canada (12/09/2019)
- AMS Special Session Sectional Meeting Ann Arbor (10/20 and 10/21/2018)
- Oberwolfach Mini-workshop on *Asymptotic Invariants of Homogeneous Ideals* (10/03/2018)
- Univ. of Nottingham Algebra Seminar (07/05/2018)
- Kumunujr (4/30/2018)
- AMS Sectional Boston (4/22/2018)
- AMS Sectional Meeting Portland (4/15/2018)
- AMS Sectional Meeting Columbus (3/18/2018)
- Special session at the Joint Math Meetings (01/2018)
- George Mason University CAG Seminar (12/08/2017)
- University of Kansas Algebra Seminar (11/30/2017)
- University of South Carolina Algebraic Geometry Seminar (11/13/2017)
- New Mexico State University (10/23/2017)
- AMS Sectional Meeting Orlando (9/23/2017)
- AMS Sectional Meeting Denton (9/9/2017)
- AMS Sectional Meeting New York (5/6/2017)
- University of Utah CA Seminar (4/21/2017)
- University of Nebraska CA Seminar (3/29–30/2017)
- AMS Sectional Meeting Charleston (3/12/2017)
- Clemson University ADM Seminar (3/9/2017)
- University of Michigan Commutative Algebra Seminar (1/12/2017)
- AMS Sectional Meeting SLC (4/10/2016)

Talks aimed at undergraduate or highschool students..

- *Symbolic powers*, University of San Diego Colloquium (02/16/2024)
- *Slicing a square pizza*, UNL Math Day, with Jack Jeffries (10/17/2022)
- *Symbolic powers and a story of algebra vs geometry*, Undergraduate Math Symposium UIC (02/11/2019)
- *Slicing a square pizza*, University of Michigan Math Club (March 2019)
- *Slicing a square pizza*, UVa Math Club (2018)
- *Slicing a square pizza*, Math & CS Seminar, Adelphi University (11/10/2017)

Organization

- Commutative and Homological Algebra Market Presentations Seminar (CHAMPS), aimed at showcasing the work of early-career researchers in commutative algebra on the US academic job market, since 2020. Co-organized with Keri Sather-Wagstaff as a weekly virtual seminar 2020–2022.

- UNL Commutative Algebra Seminar, since Fall 2021. Co-organized with Anna Brosowsky (since Fall 2025), Mark Walker (since Fall 2021), and Jack Jeffries (Fall 2021 to Spring 2022).

- Summer CAMP, Professional Development workshop for commutative algebraists, co-organized with Jack Jeffries and Mark Walker, August 2025.

- International REU in Commutative Algebra, co-organized with Jack Jeffries, Luis Núñez-Betancourt, and Alexandra Seceleanu. Summer 2025.
- *Commutative Algebra in Mixed characteristic*, conference co-organized with Jack Jeffries, March 2025.
- Summer CAMP, Professional Development workshop, co-organized with Jack Jeffries, August 2023.
- AMS Special Session on *Applied and Computational Commutative Algebra* at the 2025 Joint Math Meeting, co-organized with Branden Stone.
- AMS Special Session on *Commutative Algebra* at the Fall 2023 Central Sectional Meeting, co-organized with Tom Marley.
- AMS Special Session on *Commutative Algebra* at the Fall 2022 Western Sectional Meeting, co-organized with Adam Boocher and Jenny Kenkel.
- Virtual Special Session on *Commutative Algebra* at the Joint Math Meeting 2022, co-organized with Keri Sather-Wagstaff and Janet Vassilev.
- Virtual Special Session on *Women in Commutative Algebra – One hundred years of Idealtheorie in Ringbereichen* at the AMS Western Meeting, May 2021, co-organized with Alessandra Costantini.
- UCR Commutative Algebra Seminar, co-organized with Alessandra Costantini, 2020–2021.
- Zoom session on *commutative algebra*, co-organized with Keri Sather-Wagstaff. Session originally planned for the 2020 AMS Sectional Meeting in Charlottesville, which was canceled due to COVID.
- Special session on *developments in commutative algebra*, AMS Sectional Meeting in Auburn, 2019, co-organized with Patricia Klein.
- Commutative Algebra Seminar at the University of Michigan, co-organized with Mel Hochster.
- *Forum for Interdisciplinary Dialogue 2015 – Ethics and Development*, co-organized with the Jefferson Scholars Foundation.
- *Seminário Diagonal*, co-organizer, Math students seminar, Instituto Superior Técnico, 2010–2013.

Software

Macaulay2 packages

ThickSubcategories
developed with Janina Letz and Josh Pollitz

SymbolicPowers
with contributions from Ben Drabkin, Alexandra Seceleanu, and Branden Stone

SpectralSequences
developed with David Berlekamp, Adam Boocher, Nathan Grieve, Gregory G. Smith, and Thanh Vu

Service and outreach

Service

commalg.org
co-administrator with Branden Stone   *Since 2020*
`commalg.org` is the website for the commutative algebra community wordwilde.

Vice-president of CIM
Centro Internacional de Matemática, Portugal   *Since 2024*

Co-chair of the NCUWM committee
organizing the Nebraska Conference for Undergraduate Women in Mathematics   *2022–2023*

AWM Student Chapter at UVa
Chapter president and founding member   *2016–2017*

Math Outreach

- **UNL Math Ambassadors**
  Founder and organizer; outreach activities with elementary and middle schoolers   *since Fall 2023*

- **UNL Math Circle**
  Volunteer for math outreach activities with highschool students   *2022–present*

- **Girls, Inc.**
  Math outreach activities with rising 8th graders, all women   *Summer 2022*

- **Wolverine Pathways**
  Math enrichment activities with middle school and highschool students   *Fall 2018*

- **UVa Math Ambassadors**
  Classroom activities with 5th and 6th grade students   *2014–2018*