Eloísa Grifo | CV

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Appointments

University of Nebraska – Lincoln **Lincoln, Nebraska**
Assistant Professor *August 2021 – present*

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..

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: Geometry, Topology 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 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, Dec. 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.

Awards

- 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 since Spring 2024.
- Uyen Tran, Summer REU at UNL, 2022.
- Fangu Chen and Alan Tang, REU at the University of Michigan, Summer 2019, co-mentored 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
- Introduction to Mathematical Proofs (Math 309): Fall 2022, Fall 2023, Fall 2024
- Topics in Algebra (Math 918): Spring 2022 (Symbolic powers)
- Introduction to Modern Algebra (Math 310): Fall 2021
- Linear Algebra (Math 314): Fall 2021

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

Invited Talks

Lecture series

- *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

- *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 Sectional Meeting in Cincinnati   (03/23/2023)
- AMS 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)
- Omaha Virtual AMS 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)
- Virtual AMS Meeting Cincinnati   (04/17/2021)
- Virtual AMS Sectional Meeting at Brown   (03/20/2021)
- Mulheres Matemáticas: uma tarde de encontro   (01/2021)
- Virtual AMS 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 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)

Conferences and seminars organized

o 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.

o UNL Commutative Algebra Seminar, with Jack Jeffries and Mark Walker, since Fall 2021.

o Summer CAMP, Professional Development workshop, co-organized with Jack Jeffries, August 2023.

o AMS Special Session on *Applied and Computational Commutative Algebra* at the 2025 Joint Math Meeting, co-organized with Branden Stone.

o AMS Special Session on *Commutative Algebra* at the Fall 2023 Central Sectional Meeting, co-organized with Tom Marley.

o AMS Special Session on *Commutative Algebra* at the Fall 2022 Western Sectional Meeting, co-organized with Adam Boocher and Jenny Kenkel.

o Virtual Special Session on *Commutative Algebra* at the Joint Math Meeting 2022, co-organized with Keri Sather-Wagstaff and Janet Vassilev.

o 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.

o UCR Commutative Algebra Seminar, co-organized with Alessandra Costantini, 2020–2021.

o 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.

o Special session on *developments in commutative algebra*, AMS Sectional Meeting in Auburn, 2019, co-organized with Patricia Klein.

o Commutative Algebra Seminar at the University of Michigan, co-organized with Mel Hochster.

o *Forum for Interdisciplinary Dialogue 2015 – Ethics and Development*, co-organized with the Jefferson Scholars Foundation.

o *Seminário Diagonal*, co-organizer, Math students seminar, Instituto Superior Técnico, 2010–2013.

Software

Macaulay2 packages

o **ThickSubcategories**
   developed with Janina Letz and Josh Pollitz

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

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

Service and outreach

Service

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

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

o **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*