

LORENZO GUERRIERI

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CURRENT POSITION

Postdoctoral position (Adiunkt Badawczy) at Jagiellonian University of Krakow (from 01/2020 to 07/2024)

(supported by Nawa Grant of Professor Jerzy Weyman)

- I organize the Algebra seminar at Jagiellonian University (Krakow, 2022-2024)
- I obtained a Miniatura grant (2023) of the amount of 39395 PLN from NCN (Narodowe Centrum Nauki). I will use the money to visit UC Berkeley in April 2024 during the Thematic Semester in Commutative Algebra.

PREVIOUS POSITIONS

I obtained a 3-months research fellowship from INdAM (Italian institute of mathematics) (from 04/2019 to 06/2019)

(spent at Ohio State University under the supervision of Professor K. Alan Loper)

DOCTORAL STUDIES

Università degli Studi di Catania (from 01/11/2014 to 07/03/2018)

Ph.D in Mathematics – Graduated March 2018

- Researching in Commutative Algebra with advisor Professor Marco D'Anna.
- Attended advanced courses in Computational Algebra , Numerical Semigroups, Algebra of zero dimensional schemes and Ellyptic curves.
- Fellowship from the math and computer science department from 01/11/2014 to 31/10/2017.

Purdue University (USA) (Spring 2016 and Fall 2016)

- Attended an advanced course in Commutative and Homological Algebra.
- Attended a lecture course in Commutative Ring Theory.
- Researching under the supervision of Professor William J. Heinzer.

Università degli Studi di Catania (Summer 2018)

- I have attended and passed the exams of advanced class in Psychology of Learning and Evolution, Pedagogy and Cultural Antropology specific for the preparation of high school level teachers.

PUBLICATIONS

- **Non-integrally closed Kronecker function rings and integral domains with a unique minimal overring**, with K. Alan Loper. Annali di Matematica (2023). <https://doi.org/10.1007/s10231-023-01410-2>

- **Mapping resolutions of length three II – Module formats**, with S. Filippini. Preprint, [ArXiv:2303.10098](https://arxiv.org/abs/2303.10098) (2023)
- **Higher structure maps for free resolutions of length 3 and linkage**, with X. Ni and J. Weyman. Preprint, [ArXiv:2208.05934](https://arxiv.org/abs/2208.05934) (2022)
- **From ancient egyptian fractions to modern algebra**, with K. Alan Loper and G. Oman. To appear on Journal of Algebra and its Applications (2023)
- **Properties and applications of the Apéry sets of good semigroups in N^d** , with N. Maugeri and V. Micale. J. Algebr. Comb. <https://doi.org/10.1007/s10801-022-01185-4> (2022)
- **Mapping resolutions of length three I**, with J. Weyman, Journal of Pure and Applied Algebra, 107248, <https://doi.org/10.1016/j.jpaa.2022.107248> (2023)
- **Rees algebras of ideals of star configurations**, with A. Costantini and B. Drabkin. Linear Algebra and Its Applications, vol. 645 (2022), 91-122
- **Partition of complement of good ideals and Apéry sets**, with N. Maugeri and V. Micale. Communications in Algebra vol. 49-10 (2021), 4136-4158
- **On the integral domains characterized by a Bezout Property on intersections of principal ideals**, with K. Alan Loper. Journal of Algebra vol. 586 (2021), 208-231
- **On quasi-eigengenerated and Freiman cover ideals of graphs**, with B. Drabkin. Communications in Algebra, vol. 48 (2020), 4413-4435
- **The type of a good semigroup and the almost symmetric condition**, with M. D'Anna and V. Micale. Mediterr. J. Math. 17, 28, 1-23 (2020). <https://doi.org/10.1007/s00009-019-1467-y>
- **The Apéry Set of a Good Semigroup**, with M. D'Anna and V. Micale. (2020) *In: Facchini A., Fontana M., Geroldinger A., Olberding B. (eds) Advances in Rings, Modules and Factorizations. Rings and Factorizations 2018. Springer Proceedings in Mathematics & Statistics, vol 321. Springer, Cham pp 79-104*
- **Asymptotic invariants of ideals with Noetherian symbolic Rees algebra and applications to cover ideals** . with B. Drabkin. J. of Pure App. Algebra, Vol. 224, Issue 1, pg 300-319, January 2020
- **Directed unions of local monoidal transforms and GCD domains**. (2019). Journal of Algebra and its Applications, Vol 19, No 4, 2050061 [doi:10.1142/S0219498820500619](https://doi.org/10.1142/S0219498820500619) [arxiv:1808.07735](https://arxiv.org/abs/1808.07735)
- **PhD Thesis: Shannon extensions of regular local rings – Lefschetz properties for Gorenstein graded algebras associated to Apéry Sets** (2018) <http://archivia.unict.it/handle/10761/3910>
- **Lefschetz properties of Gorenstein graded algebras associated to the Apéry**

set of a numerical semigroup. Arkiv för Matematik, Vol. 57, No. 1 (2019), pp. 85-106.

- **Directed unions of local quadratic transforms of regular local rings and pullbacks**, with W. Heinzer, B. Olberding and M. Toeniskoetter. In: *Fontana M., Frisch S., Glaz S., Tartarone F., Zannardo P. (eds) Rings, Polynomials, and Modules. Springer, Cham (2017)*

TEACHING ACTIVITIES

- Teacher of a PhD level course titled “Free resolutions of ideals in commutative rings” (Jagiellonian University in Krakow, Fall 2023)
- Teaching Assistant for the course of General Topology at the Department of Mathematics and Computer Science (Catania, Fall 2019)
- Teacher of a Basic course in Mathematics (corso zero) at the Department of Science of Agriculture (Catania, Fall 2018)
- Teaching Assistant for the course of Mathematics 2 (calculus in multi-variables and differential equations) at the Department of Chemistry (Catania, Spring 2018)
- Teaching Assistant for the course of Abstract Algebra at the Department of Mathematics and Computer Science (Catania, Fall 2017, Spring 2018, Fall 2018)
- Teaching Assistant for the course of Mathematics (including precalculus and calculus) at the Department of Science of Agriculture (Catania, Fall 2017)

CONFERENCES AND SCHOOLS ATTENDED

- XXIV International Workshop for Young Mathematicians "Representation Theory", Krakow (Poland), September 17-23, 2023 (member of scientific committee)
- Conference in Rings and Factorizations, Graz (Austria), July 10-14th 2023 (speaker)
- Workshop on Commutative Algebra and Algebraic Geometry, Catania, September 7-9, 2022 (invited speaker)
- Master Class: Local Cohomology and related topics, Stockholm, August 1–5, 2022
- Summer school in Algebraic Combinatorics, July 11-15, 2022 Kraków
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- Recent Advances in Classical Algebraic Geometry: Krakow, June 28- July 2, 2022
- INdAM workshop: International meeting on numerical semigroups, Rome, June 13- 17, 2022 (invited speaker)
- Conference on Rings and Polynomials, Graz, July 19-24, 2021 (speaker)
- Free Resolutions and Representation Theory, ICERM, August 3-7, 2020 (online)
- Macaulay2 Workshop Warwick University, 1-5 June 2020 (online)
- eCARs Early Commutative Algebra Researchers, June 27-28, 2020 (online)
- CAZoom - Virtually bringing together commutative algebra and related fields. April 25-26, 2020 (online)
- Workshop on Singularities: semigroups, topology and valuations, October 28-31, 2019 at Complutense University of Madrid (speaker)
- Workshop, Recent developments in Commutative Algebra, July 1-5, 2019, Levico Terme, Italy
- Thematic Program in Commutative Algebra and its Interaction with Algebraic Geometry, Notre Dame, Conference in honor of Bernd Ulrich, June 16-21 2019, South Bend (Indiana)
- IMNS - International meeting on Numerical Semigroups, September 3-7 2018, Cortona, Italy (invited speaker)
- Conference IPPI- Ideal of powers and power of ideals, March 22-24, 2018 Torino, Italy (invited speaker)
- Conference “Rings and Factorization”, February 19-23, 2018, Graz, Austria (invited speaker)
- Pragmatic Summer School, June 18- July 7, 2017 Catania.
- Third Pohang International Conference on Commutative Rings and Algebras, June 5-10, 2017 - Place: Hyundai Hotel Gyeongju, Gyeongju, South Korea. (invited speaker)
- Workshop "Research Days in Commutative Algebra and Combinatorics, 23-25 May 2017 Messina

- Homological Conjectures in Commutative Algebra, 18-20 November 2016, University of Illinois at Chicago.
- Fall Southeastern Sectional Meeting AMS, North Carolina State University, Raleigh, November 12-13, 2016. Special session on Commutative Ring Theory;
- Algebra and Geometry in Catania, A workshop in honor of Alfio Ragusa's 70th birthday Catania 21-23 September 2016;
- International meeting on Numerical Semigroups with applications - Levico Terme 2016 Levico Terme 4-8 July 2016 (invited speaker);
- Recent advances in Commutative Ring and Module Theory, Bressanone 13-17 June 2016 (invited speaker);
- French-German Summer School Galois Theory and Number Theory Konstanz, 18-24 July 2015;
- AMS International Meeting 2015 Oporto 10-13 June 2015;

OTHER SEMINARS

- Invited speaker at the Commutative Algebra Seminar at Ohio State University, Columbus (Usa), May 2, 2023
- Invited speaker at the Algebra and Number Theory Seminar at Texas Tech University, Lubbock (Usa), April 26, 2023
- Invited speaker at the Algebra Seminar at Università di Genova, Genova (Italy), April 12, 2023
- Invited speaker at the Seminar at Università del Salento, Lecce (Italy), March 9, 2023
- Invited speaker at the Commutative Algebra Seminar at Ohio State University, Columbus (Usa), May 17, 2022
- Invited speaker at the Algebra and Geometry Seminar at University of Catania (Italy), December 14, 2021
- Invited speaker at the Geometry Seminar at Impan Krakow (Poland), January 22, 2020
- Invited speaker at the Algebra Seminar at University Roma Tre (Italy), May 31, 2018 and November 25, 2019
- Invited speaker at the Algebra Seminar at University of Nebraska, Lincoln (Usa), April 24, 2019

- Invited speaker at the Ring Theory Seminar at Ohio State University, Columbus (Usa), April 15, 2019
- Invited speaker at the Algebra Seminar at Graz University of Technology (Austria), December 14, 2018
- Invited speaker at the Algebra Seminar at University of Uppsala (Sweden), November 20, 2018

PREVIOUS EDUCATION

Università degli Studi di Roma Tre
from 01/03/2013 to 23/10/2014

M.A. in Mathematics

- Graduated with score 110/110 Cum Laude.
- Thesis: "Integer Valued Polynomials over set of Algebraic Integers" with advisor Professor Stefania Gabelli.
- Relevant courses: Commutative Algebra, Algebraic Number Theory, Analytic Number Theory, Finite Groups Theory, Probability with Martingales.

Università degli Studi di Roma Tre
from 20/09/2009 to 21/02/2013

B.S. in Mathematics

- Graduated with score 110/110 Cum Laude.
- Relevant courses: Complex Analysis, Galois Theory, Elementary Number Theory.

LANGUAGE SKILLS

- Italian: Native Language.
- English: Excellent.
- French: Intermediate.
- Spanish: Good.
- Polish: Intermediate.

CRACOVIA
 11/04/2024

Luca Geronzi