

# Francesco Strazzanti

## Personal data

Name	Francesco
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Date of birth	March 29, 1988
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## Postdoctoral positions

**01/05/2021 - present** Postdoc position at the Department of Mathematics “Giuseppe Peano” of the University of Turin, Italy.

**01/05/2020 - 30/04/2021** Postdoc position at the Department of Mathematics of the University of Bologna, Italy.

**01/04/2019 - 31/03/2020** Postdoc position funded by INdAM at the Department of Mathematics and Computer Science of the University of Catania, Italy.

**19/09/2018 - 18/03/2019** Grant for research activity abroad by INdAM ay 2018-2019 at the Institute of Mathematics of the University of Barcelona (IMUB), Spain.

**23/05/2018 - 22/08/2018** Research fellow at the Department of Mathematics and Computer Science of the University of Catania, Italy.

**19/01/2018 - 18/04/2018** Grant for research activity abroad by INdAM ay 2017-2018 at the Institute of Mathematics of the University of Barcelona (IMUB), Spain.

**02/01/2017 - 31/12/2017** Postdoc position at the Department of Algebra and Institute of Mathematics of the University of Seville (IMUS), Spain.

## Education

**Ph.D in Mathematics**, University of Pisa, Italy (2012 - 2016).

Thesis: *A family of quotients of the Rees algebra and rigidity properties of local cohomology modules.*

Advisor: Enrico Sbarra.

**Laurea Magistrale in Mathematics (Master)**, University of Catania, Italy (2010 - 2012).

Thesis: *Almost Gorenstein rings* (in italian).

Advisor: Marco D'Anna.

Mark: 110/110 and honors.

**Laurea in Mathematics (Bachelor)**, University of Catania, Italy (2007 - 2010).

Thesis: *Seminormal rings and subintegral extensions* (in italian).

Advisor: Marco D'Anna.

Mark: 110/110 and honors.

## Publications and Preprints

1. M. D'Anna, F. Strazzanti, *The numerical duplication of a numerical semigroup*, Semigroup Forum **87** (2013), no. 1, 149–160.
2. V. Barucci, M. D'Anna, F. Strazzanti, *A family of quotients of the Rees Algebra*, Communications in Algebra **43** (2015), no. 1, 130–142.
3. F. Strazzanti, *One half of almost symmetric numerical semigroups*, Semigroup Forum **91** (2015), no. 2, 463–475.
4. F. Strazzanti, *Minimal genus of a multiple and Frobenius number of a quotient of a numerical semigroup*, International Journal of Algebra and Computation **25** (2015), no. 6, 1043–1053.
5. V. Barucci, M. D'Anna, F. Strazzanti, *Families of Gorenstein and almost Gorenstein rings*, Arkiv för Matematik **54** (2016), no. 2, 321–338.
6. E. Sbarra, F. Strazzanti, *A rigidity property of local cohomology modules*, Proceedings of the American Mathematical Society **145** (2017), 4099–4110.
7. A. Oneto, F. Strazzanti, G. Tamone, *One-dimensional Gorenstein local rings with decreasing Hilbert function*, Journal of Algebra **489** (2017), 91–114.
8. D. Bolognini, A. Macchia, F. Strazzanti, *Binomial edge ideals of bipartite graphs*, European Journal of Combinatorics **70** (2018), 1–25.
9. M. D'Anna, F. Strazzanti, *New algebraic properties of quadratic quotients of the Rees algebra*, Journal of Algebra and its Applications **18** (2019), no. 3, 1950047.
10. V. Barucci, F. Strazzanti, *Dilatations of numerical semigroups*, Semigroup Forum **98** (2019), no. 2, 251–260.
11. M. D'Anna, R. Jafari, F. Strazzanti, *Tangent cones of monomial curves obtained by numerical duplication*, Collectanea Mathematica **70** (2019), no. 3, 461–477.
12. F. Strazzanti, K.-i. Watanabe, *Almost symmetric numerical semigroups with odd generators* in Numerical Semigroups - IMNS 2018, Springer INdAM Series **40** (2020), 335–349.
13. A. Moscariello, F. Strazzanti, *Nearly Gorenstein vs almost Gorenstein affine monomial curves*, Mediterranean Journal of Mathematics **18** (2021), article number: 127.
14. A. Caminata, F. Strazzanti, *Nearly Gorenstein cyclic quotient singularities*, Beiträge zur Algebra und Geometrie / Contributions to Algebra and Geometry, DOI: 10.1007/s13366-020-00533-4, to appear.
15. M. D'Anna, F. Strazzanti, *Almost canonical ideals and GAS numerical semigroups*, Communications in Algebra **49** (2021), no. 8, 3534–3551.
16. M. D'Anna, R. Jafari, F. Strazzanti, *Simplicial affine semigroups with monomial minimal reduction ideals*, Mediterranean Journal of Mathematics, to appear.
17. F. Strazzanti, S. Zarzuela Armengou, *The Hilbert-Kunz function of some quadratic quotients of the Rees algebra*, arXiv:2002.00282.
18. M. D'Anna, F. Strazzanti, *When is  $m : m$  an almost Gorenstein ring?*, arXiv:2004.02252.
19. D. Bolognini, A. Macchia, F. Strazzanti, *Cohen-Macaulay binomial edge ideals and accessible graphs*, arXiv:2101.03619.

## Invited talks

Department of Mathematics “Giuseppe Peano”, University of Turin, Italy, June 16, 2021 (virtual lecture).

Title: *Cohen-Macaulay binomial edge ideals*

1<sup>st</sup> MIM short research course on *Affine Semigroup Rings*, Kharazmi University, Tehran, Iran, December 5, 2020 (virtual lecture).

Title: *Almost Gorenstein and nearly Gorenstein numerical semigroup rings.*

*Workshop for Young Researchers in Mathematics*, Bucharest, Romania, June 4, 2019.

Title: *A family of quadratic quotients of the Rees algebra.*

*Frobenius Action in Commutative Algebra: Recent Developments (FACARD)*, Barcelona, Spain, January 17, 2019.

Title: *A family of quadratic quotients of the Rees algebra.*

*International meeting on numerical semigroups*, Cortona, Italy, September 5, 2018.

Title: *Tangent cones of monomial curves obtained by numerical duplication.*

Department of Mathematics and Computer Science, University of Catania, Italy, May 18, 2018.

Title: *Binomial edge ideals of bipartite graphs.*

Department of Mathematics and Computer Sciences, University of Barcelona, Spain, March 2, 2018.

Title: *Binomial edge ideals of bipartite graphs.*

Institute of Mathematics of the University of Seville (IMUS), Spain, November 8, 2017.

Title: *Numerical semigroups.*

Department of Mathematics, University of Pisa, Italy, September 11, 2017.

Title: *Binomial edge ideals.*

*Meeting of the Catalan, Spanish, Swedish Math Societies*, Umeå, Sweden, June 15, 2017.

Special session: *Numerical semigroups and applications.*

Title: *Numerical duplication and its associated graded ring.*

*Workshop for young researchers in mathematics*, Bucharest, Romania, May 19, 2017.

Title: *Binomial edge ideals of bipartite graphs.*

*Workshop on Algebra and Geometry 2017 (Thematic week on Semigroups and Applications)*, Badajoz, Spain, May 8, 2017.

Title: *Numerical duplication and its associated graded ring.*

Department of Algebra, Complutense University of Madrid, Spain, April 20, 2017.

Title: *Numerical semigroups and applications.*

Department of Algebra and Computer Sciences, University of Barcelona, Spain, April 6, 2017.

Title: *One-dimensional Gorenstein local rings with decreasing Hilbert function.*

*International meeting on numerical semigroups with applications*, Levico Terme, Italy, July 8, 2016.

Title: *Symmetric numerical semigroups with decreasing Hilbert function.*

Institute for Mathematics, University of Osnabrück, Germany, June 30, 2016.

Title: *Rigidity properties of local cohomology modules.*

*Welcome Workshop for the special spring semester 2016*, Genoa, Italy, February 1, 2016.

Title: *One-dimensional Gorenstein local rings with decreasing Hilbert function.*

Department of Mathematics, Royal Institute of Technology (KTH), Stockholm, Sweden, January 27, 2016.

Title: *Rigidity properties of Betti numbers and local cohomology modules.*

Department of Mathematics and Computer Science, University of Catania, Italy, April 1, 2015.

Title: *Idealization and amalgamated duplication: an unified approach and applications.*

International meeting on numerical semigroups, Cortona, Italy, September 9, 2014.

Title: *Numerical duplication of a numerical semigroup.*

## Other participations in conferences and schools (selected)

*Einstein Workshop on Polytopes and Algebraic Geometry*, Berlin, Germany, December 2-4, 2019.

*Algebraic Combinatorics in Genova*, Genoa, Italy, September 11-13, 2019.

*Recent developments in Commutative Algebra*, Levico Terme, Italy, July 1-5, 2019.

*School (and workshop) on syzygies*, Trento, Italy, September 4-9, 2017.

*Meeting on Commutative Algebra*, Genoa, Italy, October 22-24, 2015.

*Combinatorial and Experimental Methods in Commutative Algebra and Related Fields*, Osnabrück, Germany, October 7-10, 2015.

*Effective Methods in Algebraic Geometry (MEGA)*, Trento, Italy, June 15-19, 2015.

*Joint meeting AMS/EMS/SPM*, Porto, Portugal, June 10-13, 2015.

*Minimal free resolutions, Betti numbers, and combinatorics*, Edinburgh, United Kingdom, June 1-5, 2015.

*HTCA 2015 - Homology: Theoretical and Computational Aspects*, Genoa, Italy, February 9-13, 2015.

*Summer school: Combinatorial structures in geometry*, Osnabrück, Germany, October 6-9, 2014.

*Meeting On Combinatorial Commutative Algebra 2014*, Levico Terme, Italy, September 10-12, 2014.

*Pragmatic 2014, Local cohomology and syzygies of affine algebras*, Catania, Italy, June 23 - July 11, 2014.

*Summer course of mathematics* organized by Scuola Matematica Interuniversitaria in Perugia, Italy, July 31 - September 2, 2011. Courses attended: Algebra and Algebraic geometry.

*International school in computational commutative algebra and algebraic geometry*, Messina, Italy, October 18-23, 2010.

*Summer course of mathematics* organized by Scuola Matematica Interuniversitaria in Perugia, Italy, August 1- September 3, 2010. Courses attended: Algebra and Algebraic geometry.

## Awards

Italian habilitation to be a "Professore di II fascia" (Associate Professor) in Geometry and Algebra (valid from 18/09/2018 to 18/09/2027).

## Projects' membership

Local project funded by the University of Catania: *Proprietà locali e globali di anelli e di varietà algebriche* - PIACERI 2020-2022.

## Former projects' membership

Plan Estatal 2013-2016 Excelencia - Proyectos I+D: Geometría Aritmética, D-Módulos y Singularidades. MTM2016-75027-P.

Webpage: <http://investigacion.us.es/sisius/proyecto/27699>.

Local project funded by the University of Catania: *Proprietà algebriche locali e globali di anelli associati a curve e ipersuperfici* - PTR 2016-2018.

Plan Estatal 2013-2016 Excelencia - Proyectos I+D: *Geometría Algebraica y Geometría Aritmética: Métodos Diferenciales, Singularidades, Cohomología y Curvas Elípticas*. MTM2013-46231-P.

Webpage: <https://investigacion.us.es/sisius/proyecto/24322>

MIUR-DAAD Joint Mobility Program 2016: *Combinatorial and Computational Methods in Commutative Algebra*, project nr. 57267452.

Prin 2010-11: *Geometria delle varietà algebriche*.

Research in pairs with Raheleh Jafari and Marco D'Anna in the framework of the *ICTP-INdAM Research in Pairs Programme*, Catania (Italy), October 1-22, 2019.

## Research Stays

University of Pisa, Italy, September 9-17, 2017.

University of Barcelona, Spain, April 2-8, 2017.

University of Osnabrück, Germany, June 27 2016- July 2, 2016.

Royal Institute of Technology (KTH), Stockholm, Sweden, January 25-29, 2016.

Philipps University of Marburg, Germany, October 12-19, 2015.

University of Duisburg-Essen, Germany, October 2-19, 2014.

## Teaching

Tutor activity for the course *Algebra 1* (30 hours), Department of Mathematics, University of Bologna, ay 2020/2021.

PhD course entitled *Numerical semigroups and commutative algebra* (24 hours), Phd in Mathematics and Computational Science, Consortium of Universities of Palermo, Catania, and Messina (Italy), ay 2019/2020.

*Open course* entitled *Numerical semigroups and commutative algebra* addressed to graduate students and professors, Department of Algebra, University of Seville (Spain), 15 lessons of 90 minutes, year 2017.

Pre-course in Mathematics, Department of Civil and Industrial Engineering of the University of Pisa (Italy), 30 hours, ay 2016/2017.

Supplementary teaching, Department of Mathematics of the University of Pisa (Italy), 10 hours, ay 2015/2016.

Supplementary teaching, Laurea in Mathematics (Bachelor), University of Pisa (Italy), 20 hours, ay 2014/2015.

Course for OFA (Obblighi Formativi Aggiuntivi), Laurea in Mathematics (Bachelor), University of Pisa (Italy), 20 hours, ay 2013/2014.

Tutor in Laurea in Mathematics (Bachelor), University of Catania (Italy), 80 hours, ay 2011/2012.

## Other

Computer skills: use of mathematical software like Macaulay 2, Cocoa, Gap, and Singular.

Language skills: Italian (mother tongue), English (fluent), Spanish (Basic).

Referee for several mathematical journals.

Reviewer for Zentralblatt MATH.

Member of the Barcelona's node of the spanish network *Monoids and applications*.

Webpage: <http://www.ugr.es/~semigrupos/MyA/nodos-en.html>

Member of the italian *National Group for Algebraic and Geometric Structures, and their Applications* (GNSAGA - INDAM).

Webpage: <http://www.altamatematica.it/gnsaga>

Member of the Andalusian research group *FQM-218 - Algebraic Geometry, Differential Systems and Singularities*.

Webpage: <http://grupo.us.es/gfqm218/php/index.php?carga=inicio>