

Eleonora Anna Romano

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UNIGE

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Contact information

Nationality **Italian.**
Born **01/09/1988, Erice (TP).**
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Position held

01/11/2020 - present **Researcher (RTDA)**, *UNIGE, University of Genova, Faculty of Mathematics.*
01/09/2020 - **Post-Doc**, *UNITN, University of Trento, Faculty of Mathematics,*
31/10/2020 Director: M. Andreatta.
Project: *research in Mathematics*
01/09/2018 - **Post-Doc**, *MIMUW, University of Warsaw, Faculty of Mathematics, Informatics and*
31/08/2020 *Mechanics,*
Director: Jarosław A. Wiśniewski.
Project: *Algebraic Torus Actions and Combinatorics.*
01/09/2017 - **Post-Doc**, *MIMUW, University of Warsaw, Faculty of Mathematics, Informatics and*
31/08/2018 *Mechanics,*
Director: Jarosław A. Wiśniewski.
Project: *Algebraic Geometry, Varieties and Structures.*

Education

01/2014 - 01/2017 **Ph.D. in Algebraic Geometry**, *Dept. of Mathematics, University of Torino,*
Advisor: Cinzia Casagrande.
Ph.D. thesis: *Non-elementary Fano conic bundles.*
10/2011 - 07/2013 **Master Degree in Mathematics**, *University of Palermo,*
Thesis: *Hurwitz spaces and the regular inverse Galois problem,*
Supervisor: Prof. Vassil Kanev.
Grade 110/110 cum laude et mentione
10/2007 - 03/2011 **Bachelor Degree in Mathematics**, *University of Palermo,*
Thesis: *Random fixed points and random approximation,*
Supervisor: Prof. Pasquale Vetro.
Grade 110/110 cum laude

Visiting Positions

26/01–08/02/2020 **Dept. of Mathematics**, *University of Torino, Italy.*
7/10–30/11/2019 **Guest in occasion of the Einstein semester on Algebraic Geometry: Varieties, Polyhedra, Computation**,
Dept. of Mathematics, Freie Universität, Berlin, Germany.

5–17/11/2018; **Dept. of Mathematics**,
 7–21/01/2019; *University of Trento, Povo, Italy.*
 7–17/05/2019;
 14–31/07/2019;
 9–23/12/2019
 11–15/12/2017 **Dept. of Mathematics**,
Jagiellonian University, Krakow, Poland.
 18/04–18/05/2016 **Polish Algebraic Geometry mini-semester**,
Institute of Mathematics of the Polish Academy of Sciences, Warsaw, Poland.

Research field

Algebraic Geometry: Birational Geometry, Fano varieties, Mori Dream Spaces, Algebraic group actions on complex projective manifolds.

Publications

- [1] **E. A. Romano**, *Non-elementary Fano conic bundles*, Ph.D. Thesis. Available at <https://sites.google.com/view/eleonora-anna-romano>.
- [2] **E. A. Romano**, *Non-elementary Fano conic bundles*, *Collectanea Mathematica*, **70(1)**(2019), 33–50.
- [3] **E. A. Romano**, *Positivity of anticanonical divisors from the viewpoint of Fano conic bundles*, *Osaka J. Math.*, **56**(2019), 65–74.
- [4] **E. A. Romano, with Pedro Montero**, *A characterization of some Fano 4-folds through conic fibrations*, arXiv:1803.09129v2, 28 pages. To appear in the *International Mathematics Research Notices*, IMRN.
DOI: 10.1093/imrn/rnz244; online version: <https://doi.org/10.1093/imrn/rnz244>
- [5] **E. A. Romano**, *A note on flatness of some fiber type contractions*, arXiv:1906.10911, *Proceeding of the Japan Academy of Sciences, series A*, **95(7)**(2019), 103–106.
DOI:10.3792/pjaa.95.103
- [6] **E. A. Romano, with J. A. Wiśniewski**, *Adjunction for varieties with a \mathbb{C}^* action*, arXiv:1904.01896, 44 pages, accepted for publication in *Transformation Groups*, 2020.
DOI:10.1007/s00031-020-09627-8; online version: <https://doi.org/10.1007/s00031-020-09627-8>
- [7] **E. A. Romano, with G. Occhetta, L. E. Solá Conde and J. A. Wiśniewski**, *High rank torus actions on contact manifolds*, *Sel. Math. New Ser.* 27, 10 (2021).
DOI:10.1007/s00029-021-00621-w; online version: <https://doi.org/10.1007/s00029-021-00621-w>
- [8] **E. A. Romano, with C. Casagrande**, *Classification of Fano 4-folds with Lefschetz defect 3 and Picard number 5*, accepted for the publication in the *Journal of Pure and Applied Algebra*, 2021, arXiv:2007.11229, 16 pages.

Preprints

- [9] **E. A. Romano, with G. Occhetta, L. E. Solá Conde and J. A. Wiśniewski**, *Small bandwidth \mathbb{C}^* -actions and birational geometry*, arXiv:1911.121229, 43 pages, 2019, submitted.
- [10] **E. A. Romano, with G. Occhetta, L. E. Solá Conde**, *Varieties with two projective bundles structures*, arXiv:2001.06215, 15 pages, 2020, submitted.
- [11] **E. A. Romano, with G. Occhetta, L. E. Solá Conde and J. A. Wiśniewski**, *Small modifications of Mori dream spaces arising from \mathbb{C}^* -actions*, arXiv:2103.07209, 29 pages, 2021, submitted.
- [12] **E. A. Romano, with L. Barban**, *Toric non-equalized flips associated to \mathbb{C}^* -actions*, arXiv:2104.14442, 20 pages, 2021, submitted.

Works in Progress

NOTE: draft of [14,15] can be sent via mail under request.

- [13] **E. A. Romano**, with **C. Casagrande** and **Saverio Secci**, *Fano 4-folds with Lefschetz defect 3*.
- [14] **E. A. Romano**, with **G. Occhetta**, **L. E. Solá Conde** and **J. A. Wiśniewski**, *Cremona transformations and \mathbb{C}^* -actions*.
- [15] **E. A. Romano**, with **L. Barban**, **L. E. Solá Conde** and **S. Urbinati**, *Local Cox rings and \mathbb{C}^* -actions*.

Collaborators

Lorenzo Barban, *PhD student*,
Dept. of Mathematics, University of Trento, Italy.

Cinzia Casagrande, *Full Professor*,
Dept. of Mathematics, University of Torino, Italy.

Pedro Montero, *Academic*,
Dept. of Mathematics, Universidad Tecnica F. Santa Maria, Valparaiso, Chile.

Gianluca Occhetta, *Full Professor*,
Dept. of Mathematics, University of Trento, Italy.

Luis E. Solá Conde, *Associate Professor*,
Dept. of Mathematics, University of Trento, Italy.

Stefano Urbinati, *Associate Professor*,
Dept. of Mathematics, University of Udine, Italy.

Saverio Secci, *PhD student*,
Dept. of Mathematics, University of Torino, Italy.

Jarosław A. Wiśniewski, *Full Professor*,
Dept. of Mathematics, University of Warsaw, Poland.

Next plans: invitations for conferences

- 05–08/10/21 **Conference: Newton-Okounkov bodies and Fanosearch**,
Hotel Bellavista, Levico Terme, Trento, Italy.
- 14–18/10/21 **Workshop: \mathbb{C}^* -actions and PP-divisors**,
Sopot, Poland.
- 29/03–02/04/22 **Oberwolfach Workshop: Toric Geometry**,
Oberwolfach, Germany.

Research grants and awards

- 26-03-2021 **Seal of Excellence**, awarded by the European Commission for the project proposal *BIGTACO: Birational Geometry, Torus Actions and Combinatorics*, presented with the University of Trento (Italy) and with Freie Universität of Berlin (Germany), Marie Skłodowska-Curie actions, call H2020-MSCA-IF-2020, score: 91/100.
- 01/09/2020–01/09/2021 **Research Grant: Fondazione Amici di Claudio Dematté**, University of Trento, UNITN, Italy.
- 01/09/2018–01/09/2020 **Research Grant: ATAG project**, University of Warsaw, MIMUW, Poland.
- 01/09/2017–01/09/2018 **Research Grant: AGVS project**, University of Warsaw, MIMUW, Poland.
- 01/01/2014–31/12/2017 **Three-year PhD scholarship sponsored by the University of Torino**, UNITN, Italy.
- 01/10/2008–31/07/2013 **Scholarship sponsored by Ersu Palermo**, UNIPA, Italy.

Given Talks: Conferences and Seminars

International Conferences and Workshop

- 19/03/2021 **Torus actions and birational geometry**, *in occasion of the online workshop "Birational Geometry and thereabouts"*,
Dept. of Mathematics, University of Palermo, Italy.
- 23/01/2020 **Torus actions on projective manifolds: Combinatorics vs Birational Geometry**, *in occasion of the workshop "EXARCHOS"*,
Dept. of Mathematics, University of Ravenna, Italy.
- 25/09/2019 **Recent results on Fano 4-folds via conic bundles**, *in occasion of the "workshop on Fano varieties"*, Dept. of Mathematics, University of Udine, Italy.
- 22/11/2018 **Adjunction theory for varieties with a one-dimensional torus action**, *in occasion of the conference "Torus Actions and Combinatorics"*,
Institute of Mathematics, Polish Academy of Sciences, Warsaw, Poland.
- 29/05-01/06/2018 **A characterization of some Fano 4-folds through conic fibrations**, *in occasion of the conference "Giornate di Geometria Algebrica ed Argomenti Correlati XIV"*, Dept. of Mathematics, University of Genova, Italy.
- 24/02/2017 **The Positivity Problem: an introduction and recent developments**, *in occasion of the conference Genova-Torino-Milano*, Dept. of Mathematics, University of Genova, Italy.
- 18/12/2017 **An overview of Fano conic bundles**, *in occasion of the workshop "Seminari di Natale"*, Dept. of Mathematics, University of Milano, Italy.

Invited Talks

- 05/03/2021 **Torus actions from the viewpoint of Birational Geometry**,
Dept. of Mathematics, University of Trieste, Italy.
- 09/10/2020 **Recent results on Fano 4-folds via conic bundles**,
Dept. of Mathematics, University of Trento, Italy.
- 29/01/2020 **Torus actions on projective manifolds: Combinatorics vs Birational Geometry**,
Dept. of Mathematics, University of Torino, Italy.
- 20/12/2019 **Torus actions on projective manifolds: Combinatorics vs Birational Geometry**,
Dept. of Mathematics, University of Trento, Italy.
- 11/12/2019 **Torus actions on projective manifolds: Combinatorics vs Birational Geometry**,
Dept. of Mathematics, University of Padova, Italy.
- 31/10/2019 **Torus actions on projective manifolds: Combinatorics vs Birational Geometry**,
Dept. of Mathematics, Freie Universität, Berlin, Germany.
- 01/10/2019 **Recent results on Fano 4-folds via conic bundles**,
Dept. of Mathematics, University of Bologna, Italy.
- 02/05/2019 **Adjunction theory for varieties with a one-dimensional torus action**,
Dept. of Mathematics, University of Torino, Italy.
- 28/03/2019 **Bandwidth 3 varieties and contact manifolds in dimension 11 and 13**,
MIMUW, University of Warsaw, Poland.
- 09/11/2018 **Adjunction theory for varieties with a one-dimensional torus action**,
Dept. of Mathematics, Trento, Italy.
- 25/05/2018 **A characterization of some Fano 4-folds through conic fibrations**,
Dept. of Mathematics, University of Bologna, Italy.
- 26/01/2018 **The Positivity Problem: an introduction and recent developments**,
Institute of Mathematics, Polish Academy of Sciences, Warsaw, Poland.
- 13/12/2017 **Mori Dream Spaces from the viewpoint of Birational Geometry**,
Institute of Mathematics, Polish Academy of Sciences, Krakow, Poland.
- 11/12/2017 **An overview of Fano conic bundles**,
Dept. of Mathematics, Jagiellonian University of Krakow, Poland.

- 9/11/2017 **Mori Dream Spaces and blow-ups of the Projective space**,
MIMUW, University of Warsaw, Poland.
- 19/10/2017 **Conic bundles: an introduction and work in progress**,
MIMUW, University of Warsaw, Poland.
- 01/02/2017 **The Positivity Problem: an introduction and recent developments**,
Dept. of Mathematics, Politecnico di Torino, Italy.
- 10/05/2016 **Non-elementary Fano conic bundles**,
Institute of Mathematics, Polish Academy of Sciences, Warsaw, Poland.
- 16/03/2016 **Non-elementary Fano conic bundles**,
Dept. of Mathematics, University of Torino, Italy.

Other Seminars

- 26/03/2021 **The Cone Theorem: its proof in the singular case**,
Lectures series for the research group, Dept. of Mathematics, Genova, Italy.
- 02/10/2020 **An introduction to the Minimal Model Program and the case of surfaces**,
Young researchers seminars, Institute of Mathematics, Polish Academy of Sciences, Warsaw, Poland.
- 30/09/2020 **Chow quotients of torus actions and Mori chamber decomposition of bordisms**,
Lecture for the research group "Birational Geometry and related topics", Dept. of Mathematics, Trento, Italy.
- 28/11/2019 **Functoriality between PP-divisors and T-varieties**,
Lecture for a reading seminar, Dept. of Mathematics, Freie Universität, Berlin, Germany.
- 04/11/2015 **Recent results on the Le-Brun Salamon conjecture for contact Fano manifolds in dimensions 7, 9, 11 and 13**,
Lecture for the research group "Complex Contact Fano Manifolds", Institute of Mathematics, Polish Academy of Sciences, Warsaw, Poland.
- 11/04/2018 **Torus Actions and Combinatorics**,
Lecture for the young group seminars, MIMUW, University of Warsaw, Poland.
- 12/06/2015 **Mori's Cone**,
final exam for the Ph.D course "Intersection Theory in Algebraic Geometry", Dept. of Mathematics, University of Milano-Bicocca, Italy.
- 04/11/2015 **Generalized quaternion algebras and associated conics**,
Lecture for the research group, Dept. of Mathematics, University of Torino, Italy.
- 13/05/2015 **A brief introduction to the Minimal Model Program and the case of surfaces**,
Seminar for students, Dept. of Mathematics, University of Torino, Italy.
- 24/02/2015 **Semiample fibrations and the Iitaka fibration**,
final exam for the Ph.D course "Birational Geometry of Algebraic Varieties", Dept. of Mathematics, University of Torino, Italy.
- 28/07/2014 **Hermitian metric on complex vector bundles and Chern connection**,
final exam for the Ph.D course "Differential Geometry", Dept. of Mathematics, University of Torino, Italy.
- 28/05/2014 **Holomorphic vector bundles and the Picard Group**,
final exam for the Ph.D course "Advanced Geometry", Dept. of Mathematics, University of Torino, Italy.

Poster Presentations

- 19/03 - 23/03/2018 **A characterization of some Fano 4-folds through conic fibrations**, *School on "Birational Geometry of Hypersurfaces"*, Palazzo Feltrinelli, Gargnano del Garda, Italy.
- 05/06 - 09/06/2017 **Non-elementary Fano conic bundles**, *Lake Como School "Linear System on irregular varieties"*, Fondazione Alessandro Volta, Como, Italy.

Attended Schools, Conferences and Workshops

- 6–7/02/2020 **Workshop: Algebraic Geometry-Torino**, *University of Torino, Italy.*
- 22–24/01/2020 **Workshop: "EXARCHOS"**, *University of Ravenna, Italy.*
- 25/09/2019 **Workshop on Fano varieties**, *University of Udine, Italy.*
- 09–13/09/2019 **Autumn school: Homogeneous spaces and characteristic classes**, *Warsaw University pension in Łukecyn, Poland.*
- 29–31/01/2019 **Workshop on Fano and IHS manifolds**, *Alma mater studiorum University of Bologna, Rimini, Italy.*
- 07–11/01/2019 **Conference: A journey through Projective and Birational Geometry together with M. Andreatta**, *University of Trento, Povo, Italy.*
- 24–29/09/2019 **Conference: Algebraic Group Actions on Algebraic Varieties**, *Institute of Mathematics of the Polish Academy of Sciences, Warsaw, Poland.*
- 29/05–1/06/2018 **Conference: Giornate di Geometria Algebrica ed argomenti correlati, XIV edizione**, *University of Genova, Italy.*
- 21–22/04/2018 **School: A preparation school in Algebraic Geometry for next seminars**, *Pedagogical University of Krakow, Poland.*
- 19–23/03/2018 **School: Birational Geometry of Hypersurfaces**, *Palazzo Feltrinelli, Gargnano del Garda, Italy.*
- 18–19/12/2017 **Workshop: Seminari di Natale 2017**, *University of Milano, Italy.*
- 04–08/12/2017 **School: New advances in Fano manifolds**, *University of Cambridge, UK.*
- 11–15/09/2017 **Conference: Periods and Ricci flat manifolds**, *Institute of Mathematics of the Polish Academy of Sciences, Warsaw, Poland.*
- 03–09/09/2017 **School: Binomial ideals**, *Łukecyn, Poland.*
- 05–08/07/2017 **School: School on deformation theory in Turin**, *University of Torino, Italy.*
- 05–09/06/2017 **School: Linear System on irregular varieties**, *Fondazione Alessandro Volta, Como, Italy.*
- 24–25/02/2017 **Conference: Some topics in Commutative Algebra and Algebraic Geometry**, *University of Genova, Italy.*
- 22–25/06/2016 **School: New methods in Birational Geometry**, *Institut de Mathématiques de Toulouse, France.*
- 12/05–18/06/2016 **Conference: Varieties with trivial canonical bundles**, *Institute of Mathematics of the Polish Academy of Sciences, Bedlewo, Poland.*
- 18–22/04/2016 **School: Varieties of Calabi-Yau type**, *Institute of Mathematics of the Polish Academy of Sciences, Warsaw, Poland.*
- 04–05/02/2016 **Conference: Algebraic Geometry in Torino**, *University of Torino, Italy.*
- 18–19/01/2016 **Conference: Algebraic Geometry Genova-Nice-Torino**, *Laboratoire de Mathématiques J.A. Dieudonné Nice, France.*
- 24–25/09/2015 **Conference: Some topics in Commutative Algebra and Algebraic Geometry**, *Politecnico di Milano, Italy.*
- 22/06–10/07/2015 **School: Pragmatic 2016, Moduli of Curves and Line Bundles**, *University of Catania, Italy.*
- 25–30/05/2015 **School: Algebraic Varieties and their Moduli**, *Centro di ricerca Ennio de Giorgi, Scuola normale di Pisa, Italy.*
- 14/05/2015 **Workshop: A categorical day in Turin**, *University of Torino, Italy.*
- 3–4/02/2015 **Workshop: Miniworkshop in Algebraic Geometry in Torino**, *University of Torino, Italy.*
- 23–27/06/2014 **School: Asymptotic aspects of Complex and Algebraic Geometry**, *University of Milano-Bicocca, Italy.*
- 4–7/06/2014 **Conference: Giornate di Geometria Algebrica ed argomenti correlati, XII edizione**, *Salone d'Onore del Castello del Valentino, Torino, Italy.*

Organization of conferences and seminars

- 09–13/09/2019 **Autumn school: Homogeneous spaces and characteristic classes**, Warsaw University pension in Łukecyn, Poland.
- 29–31/01/2019 **Workshop on Fano and IHS manifolds**, Alma mater studiorum University of Bologna, Rimini, Italy.
- 12/2015–01/2017 **Ph.D. seminars for students**, Dept. of Mathematic, University of Torino, Italy.

Partecipation in Projects

Member of the Project "Algebraic Torus Actions and Combinatorics", *University of Warsaw, MIMUW*.

Member of the Project "Algebraic Geometry, Varieties and Structures", *University of Warsaw, MIMUW*.

Member of GNSAGA, Gruppo Nazionale per le Strutture Algebriche, Geometriche e le loro Applicazioni.

Member of INDAM, Istituto Nazionale di Alta Matematica.

Students and supervised theses

2020–2023 **Lorenzo Barban**, *PhD student*, University of Trento, Italy.
Supervision together with Prof. Sola Conde

2019/2020 **Lorenzo Barban**, *Toric Mori theory and varieties of bandwidth two*, Trento, Italy.
Master thesis, supervision together with Prof. Sola Conde

Teaching

- 11/2020–12/2020 **Geometry**, DIME, course for the degree in mechanics engineering, University of Genova, Italy, 35 hours.
- 11/2020–12/2020 **Geometry**, DIME, course for the degree in biotechnical engineering, University of Genova, Italy, 24 hours.
- 10/2020–12/2020 **Geometry**, DICAM, course for the degree in construction engineering architecture, University of Trento, Italy, 22 hours.
- 11/2015–01/2016 **Geometry II**, *Teaching assistant for the master degree course of Prof. Albano*, Dept. of Mathematics, University of Torino, Italy, 30 hours.
- 03/2017–06/2017 **Geometry I**, *Tutor*, Camplus Lingotto, Residenza Universitaria, Torino, Italy, 30 hours.
- 03/2017–06/2017 **Mathematics**, *Teacher*, High school "G. Giolitti", Torino, Italy, 18 hours a week.

Languages

Italian mothertongue; English level B2; Polish and Spanish basic.

Genova, 09/07/2021,

Eleonora Anna Romano