

UNIVERSITÀ DEGLI STUDI DI MILANO

Procedura di selezione per la chiamata a professore di I fascia da ricoprire ai sensi dell'art. 18, comma 1, della Legge n. 240/2010 per il settore concorsuale **01/A2 - Geometria e Algebra** (settore scientifico-disciplinare **MAT/03 - Geometria**) presso il Dipartimento di **MATEMATICA "FEDERIGO ENRIQUES"**, (avviso bando pubblicato sulla G.U. n. **51 del 07/07/2023**) - Codice concorso **5343**

Luca Tasin

CURRICULUM VITAE

Personal information

COGNOME E NOME: **Tasin Luca**

DATA DI NASCITA: **30/04/1985**

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Homepage: **sites.google.com/site/lucatastin**

LANGUAGES: **Italian (Native), English (Fluent), German (Intermediate).**

Positions

- Associate Professor, Department of Mathematics 'Federigo Enriques' University of Milan. March 2022- current position.
- Assistant Professor (ricercatore di tipo B), Department of Mathematics 'Federigo Enriques' University of Milan. March 2019- February 2022.
- Post-doc at the Math Institute of the University of Bonn (Principal Investigator of a DFG Research Grant). October 2017-February 2019.
- Post-doc at the University of Rome III. October 2016- September 2017.
- Post-doc at the Math Institute of the University of Bonn. December 2014-September 2016.
- Post-doc at the Max-Planck Institute for Mathematics in Bonn. February-November 2014.

Education

- Ph.D. in Mathematics, University of Trento (Italy), December 2013.
Thesis: *Birational Maps in the Minimal Model Program*.
Supervisors: *Marco Andreatta* (University of Trento), *Paolo Cascini* (Imperial College London).
Visiting Ph.D. student at Imperial College (London). 2011-2012.
- Laurea Specialistica (Master's Degree) in Mathematics, July 2009 (University of Trento).
Thesis: *Minimal Model Program*. Supervisor: *Edoardo Ballico*. 110/110 cum laude.
- Laurea Triennale (Bachelor's degree) in Mathematics, October 2007 (University of Trento).
Thesis: *Affine schemes*. Supervisor: *Edoardo Ballico*. 110/110 cum laude

Abilitazioni

- Abilitazione scientifica nazionale per professore di I fascia 01/A2 MAT/03, 2022.
- Abilitazione scientifica nazionale per professore di II fascia 01/A2 MAT/03, 2018.

Attività didattica

- Istituzioni di matematiche e statistiche, University of Milan 2022/2023 (50 ore).
- Complex manifolds, University of Milan, 2019/2020 (24 ore), 2021/2022 (33 ore), 2022/2023 (38 ore).
- Geometria 1, Esercitatore, University of Milan, 2019/2020 (33 ore), 2020/2021 (36 ore), 2021/2022 (36 ore), 2022/2023 (36 ore).
- Geometry of schemes, University of Milan, 2020/2021 (26 ore).
- Positivity in Algebraic Geometry, Phd course, University of Milan, 2019. 25 hours
- Introduction to Mori theory. Advanced class in algebraic geometry (master and Ph.D. students), University of Bonn, Winter semester 2018. 24 hours
- Geometry 3. Teaching assistant. University of Rome III, Department of Mathematics, 2016/2017.
- Geometry II. Teaching assistant. University of Trento, Faculty of Mathematics. 2012/2013.

Attività didattica integrativa

Supervision

- Postdocs: Saverio Andrea Secci, University of Milan, 2023-present.
- Ph.D students: Alessandro Passantino, Università di Pavia, 2020-present.
- Master students: Pedro Núñez "Derived categories and Fano fibrations". University of Bonn, 2018.
- Bachelor students: A. Arutjunova, "Schematic Harder-Narasimhan Stratification". University of Bonn, 2016.

Tutorato

- Tutoring activity for 1st year students. University of Milan, Department of Mathematics. 2020-present.
- Tutoring activity. University of Trento, Faculty of Mathematics. 2009-2011.
- Math Olympiad coach. University of Trento, Faculty of Mathematics. 2005-2010.

Organizzazione Seminari per studenti

- Abelian varieties. Graduate seminar, University of Bonn, Summer semester 2016.
- Classification of algebraic surfaces. Graduate seminar, University of Bonn, Summer semester 2018.

Attività di ricerca scientifica

Research interests

My main research interests lie in the context of geometry, more precisely:

- algebraic geometry: birational geometry (minimal model program and its applications, Fano varieties), moduli spaces of curves and higher dimensional varieties;
- differential geometry: Chern numbers, Kähler structures, Kähler-Einstein metrics.

Publications

1. *Infinitely many families of Sasaki-Einstein metrics on spheres*, with Y. Liu and T. Sano. Preprint, arxiv: 2203.08468
2. *On K-stability of Fano weighted hypersurfaces*. with T. Sano. To appear in **Algebraic Geometry**. arxiv: 2111.15209
3. *Slope inequalities for KSB-stable and K-stable families*, with G. Codogni and F. Viviani. **Proceedings of the London Mathematical Society** , 2023, 126(4), pp. 1394–1465. ISSN: 00246115
4. *On the first steps of the minimal model program for the moduli space of stable pointed curves*, with G. Codogni and F. Viviani. **Journal of the Institute of Mathematics of Jussieu** 2023, 22(1) 145–211. ISSN: 14747480
5. *On some modular contractions of the moduli space of stable pointed curves*, with G. Codogni and F. Viviani. **Algebra Number Theory** 15 (2021), no. 5, 1245–1281. ISSN: 19370652
6. *Chern numbers of uniruled threefolds*, with S. Schreieder. **Springer INdAM Series** (2020), 39, pp. 189–200. ISSN: 2281518X
7. *On the number and boundedness of minimal models of log general type*, with D. Martinelli and S. Schreieder. **Ann. Sci. Éc. Norm. Supér.** (4) 53 (2020), no. 5, 1183–1207. ISSN: 00129593
8. *Kähler structures on spin 6-manifolds*, with S. Schreieder, **Math. Annalen** 373(1-2) (2019), pp. 397–419. ISSN: 00255831
9. *A note on the fibres of Mori fibre spaces*, with G. Codogni, A. Fanelli and R. Svaldi, **Eur. J. Math.** 4 (2018), no. 3, 859–878. ISSN: 2199675X
10. *On the Chern numbers of a smooth threefold* , with P. Cascini, **Trans. Amer. Math. Soc.** 370 (2018), no. 11, 7923–7958. ISSN: 00029947
11. *Effective non-vanishing for Fano weighted complete intersections*, with M. Pizzato and T. Sano, **Algebra Number Theory** 11 (2017), no. 10, 2369–2395. ISSN: 19370652
12. *Algebraic structures with unbounded Chern numbers*, with S. Schreieder, **J. Topol.** 9 (2016), no. 3, 849–860. ISSN: 17538416
13. *A remark on the Ueno-Campana’s threefold* , with C. Bisi and P. Cascini, **Michigan Math. J.** 65 (2016), no. 3, 567–572. ISSN: 00262285
14. *Fano varieties in Mori fibre spaces*, with G. Codogni, A. Fanelli and R. Svaldi. **Int. Math. Res. Not.** IMRN 2016, no. 7, 2026–2067. ISSN: 10737928
15. *Local Fano-Mori contractions of high nef-value*, with M. Andreatta. **Math. Res. Lett.** Vol. 23, No. 5 (2016), pp. 1247–1262. ISSN: 10732780

16. *Fano-Mori contractions of high length on projective varieties with terminal singularities*, with M. Andreatta. **Bull. Lond. Math. Soc.** 46 (2014), no. 1, 185–196. ISSN: 00246093
17. *Weighted hypersurfaces with either assigned volume or many vanishing plurigeners*, with E. Ballico and R. Pignatelli. **Comm. in Algebra**, vol. 41 (2013), no. 10, 3745–3752. ISSN: 15324125
18. *Koszul cohomology and singular curves*, with E. Ballico and C. Fontanari. **Rend. Circ. Mat. Palermo** (2) 59 (2010), no. 1, 121–125. ISSN: 19734409
19. *Linear systems on weak Del Pezzo Surfaces*, with E. Ballico and C. Fontanari. **Rev. Roumaine Math. Pures Appl.** 55 (2010), no. 2, 93–96. ISSN: 0035-3965
20. *Singular curves on K3 surfaces*, with E. Ballico and C. Fontanari. **Sarajevo J. Math.** 6 (2010), no. 18, 165–168. ISSN: 1840-0655

Participation in projects

- Member of the Milan unit of the PRIN project "Curves, Ricci flat varieties and their interactions". 2021
- Member of GNSAGA (Gruppo Nazionale per le Strutture Algebriche, Geometriche e le loro Applicazioni) of INdAM (Istituto Nazionale di Alta Matematica).
- Principal Investigator, DFG Research Grant (177.000 Euros). Project "Birational Methods in Topology and Hyperkähler Geometry", Bonn 2017-2019.
- Member of the Milan unit of the PRIN project (National Research Project) "Geometria delle Varietà Algebriche." 2015
- Member of the DFG Emmy Noether-Nachwuchsgruppe "Gute Strukturen in der höherdimensionalen birationalen Geometrie" (2014-2016).
- Member of the SFB/TR 45 "Periods, Moduli Spaces and Arithmetic of Algebraic Varieties" of the DFG. 2014-2017.
- Member of the Trento unit of the PRIN project (National Research Project) "Geometria delle Varietà Algebriche." 2013-2016

Grants and awards

- PRIN project "Curves, Ricci flat varieties and their interactions". 2021
- Principal Investigator, DFG Research Grant (177.000 Euros). Project "Birational Methods in Topology and Hyperkähler Geometry", Bonn 2017-2019.
- Marie Skłodowska-Curie Actions Seal of Excellence for the proposal "Topology and Minimal Model Program", September 2016.
- Best graduate of the faculty of Mathematical, Physical and Natural Sciences, University of Trento 2008/2009.
- Scholarship of INdAM (Istituto Nazionale di Alta Matematica) 2004-2007.
- Italian Math Olympiads: Gold Medal (2004), Silver Medal (2003).

Organization of events

- Spring mini-school "Real and complex birational geometry", Milan, May 15-17, 2023.
- Summer school "Recent developments in Hodge theory". Centro De Giorgi Pisa, September 19-23, 2022.

- Workshop "Derived categories in birational geometry", Milan June 30 - July 1, 2022.
- Workshop "Algebraic Geometry in Milano", June 29, 2021.
- Online workshop "Projective and birational higher dimensional geometry", April 9 2021.
- Workshop "Topics in Birational Algebraic Geometry: Cremona transformations and the Sarkisov program", Ferrara, 14/11/2019.
- Workshop "Topics in Birational Algebraic Geometry: Fano varieties", Udine 25/09/2019.

Reviewing activity

- Referee for several journals (among them: Inventiones, Crelle, Algebraic Geometry, Communications in Contemporary Mathematics).
- Reviewer for zbMATH and Mathematical Reviews.

Selected Invited Conference Talks

- *Sasaki-Einstein metrics on spheres*, Birational Geometry conference, Lausanne 13-17 June 2022.
- *Shokurov decomposition for the moduli space of stable curves*, Higher Dimensional Complex Geometry, University of Saarland, 1-4 April 2019.
- *On the boundedness problem in birational geometry*. A Journey through Projective and Birational Geometry. Together with Marco Andreatta. Trento, Jan. 7-11, 2019.
- *On the minimal model program for the moduli space of stable curves*. Meeting in birational geometry. HSE, Moscow, October 29-31, 2018.
- *On the minimal model program for the moduli space of stable curves*. Birational Geometry and Moduli Spaces. Rome, 11-15 June 2018.
- *On a conjecture of Kawamata for weighted complete intersections*. Young Perspectives in Algebraic Geometry. Bayreuth, 7-9 March 2018.
- *Kähler structures on spin 6-manifolds*. Stability, Boundedness and Fano Varieties. Beijing BICMR, August 28- September 1 , 2017.
- *On the boundedness of minimal models*. Fano varieties and Calabi-Yau varieties. Kobe, January 23rd-25th, 2017.
- *Algebraic structures, Chern numbers and Minimal Model Program*. Higher dimensional algebraic geometry and around. Kobe-Kyoto, February 1st-5th, 2016.
- *Algebraic structures, Chern numbers and Minimal Model Program*. Congress of the Italian Mathematical Union, Siena. September 7th - 12th, 2015.
- *Algebraic structures and Chern numbers*. Classification of Projective Varieties. Levico Terme, August 31st - September 4th, 2015.
- *Chern numbers of 3-folds*. Summer school: Asymptotic aspects of complex and algebraic geometry. University of Milano Bicocca, June 23rd-27th 2014.
- *On the fibres of Mori fibre spaces*. Traumatic meeting: Birational Geometry and Fano Varieties. Special Calf event: 3rd and 4th of April 2014, Imperial College London, UK.

Selected Invited Workshops

- Foliations in Algebraic and Birational Geometry, Lausanne, September 5-9, 2023.
- Oberwolfach: Komplexe Analysis - Differential and Algebraic methods in Kähler spaces, April 9-14, 2023.
- AIM workshop: Developments in moduli problems, San Jose California, February 27 to March 3, 2023.
- Simons Conference on Higher Dimensional Geometry, Stony Brook NY, August 22-26, 2022.
- Banff: Interactions between Brauer Groups, Derived Categories and Birational Geometry of Projective Varieties, November 11-15, 2019.
- Heilbronn Focused Research Workshop On Rationality Questions, Bristol, January 6-8 2016.
- Oberwolfach: Algebraic Geometry, March 15-21, 2015.

Selected Invited Seminars

- Research Seminar in Algebraic Geometry, Hannover 29 June 2023.
- GTM seminar, Genova 8-9 June 2023.
- Number Theory Seminar, Bordeaux 26 May 2023.
- Basel-Dijon-EPFL meeting, Lausanne 12-13 May 2022.
- Algebraic Geometry Seminar, University of Rome III, 7 April 2022.
- Algebraic Geometry Seminar, University of Rome Tor Vergata, 5 April 2022.
- Algebraic Geometry Seminar, University of Turin, 29 March 2022.
- Algebraic Geometry Seminar, University of Genova, 16 March 2022.
- Algebra Oberseminar, University of Freiburg, 7 May 2021.
- Iskovskikh Seminar, Steklov Mathematical Institute, Moscow, November 1st 2018.
- Algebraic Geometry Seminar, Saarland University, February 1st 2018.
- Geometry Seminar, University of Tokyo, January 27th, 2017.
- Joint Seminar on Complex Algebraic Geometry and Complex Analysis (Bochum - Essen - Kln - Wuppertal), April 25th, 2016.
- *Survey talk on recent developments on rationality questions.* Kobe University, February 9th, 2016.
- Algebraic Geometry Seminar, Cambridge, January 20th, 2016.
- Geometry and Topology seminar, Imperial College, London. December 18th, 2015.
- *Topology and birational geometry of 3-folds.* Oberseminar Geometrie. Mathematisches Institut der Universität München. January 20th, 2015.

Attività gestionali

Membro del collegio docenti di dottorato di SCIENZE MATEMATICHE (ciclo XXXIX).

Data: 03/08/2023

Luogo: Londra