

# Mattia Talpo

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## Employment

**February 2022 - present:** Associate Professor at the University of Pisa.

**February 2019 - January 2022:** Assistant Professor (*RTDb*) at the University of Pisa.

**September 2018 - January 2019:** Research Associate at Imperial College London.

Mentor: Richard Thomas.

**January 2017 - August 2018:** PIMS Postdoc at Simon Fraser University.

Mentor: Nathan Ilten.

**January 2015 - December 2016:** Postdoc at the University of British Columbia.

Mentors: Kai Behrend, Jim Bryan, Zinovy Reichstein.

**March 10th, 2014 - November 30th, 2014:** Postdoc at the Max Planck Institute for Mathematics, Bonn.

## Education

**2010 - 2014:** Ph.D. course (*corso di perfezionamento*) in Mathematics at the Scuola Normale Superiore.

**February 27th, 2014:** Ph.D. defense, mark 70/70 summa cum laude. Thesis: *Infinite root stacks of logarithmic schemes and moduli of parabolic sheaves*, supervisor: Angelo Vistoli.

**2004 - 2009:** *Corso ordinario* in Mathematics at the Scuola Normale Superiore.

**December 21st, 2009:** Final exam (*esame di licenza*), mark 70/70 summa cum laude.

**2004 - 2009:** Student of Mathematics at the University of Pisa.

**June 29th, 2007:** Bachelor's degree (*laurea triennale*), mark 110/110 summa cum laude. Thesis (in Italian): *Characteristic classes of vector bundles*, supervisor: Angelo Vistoli.

**July 24th, 2009:** Master's degree (*laurea magistrale*), mark 110/110 summa cum laude. Thesis: *Deformation theory*, supervisor: Angelo Vistoli.

## Scholarships and Grants

**2020 - 2022:** PRA\_2020\_40 "Spazi di moduli, geometria aritmetica e aspetti storici" (31.625,00€) from the University of Pisa.

**2017 - 2018:** PIMS postdoctoral fellowship.

**2013:** research grant (*borsa di formazione*) from the Scuola Normale Superiore.

**2010 - 2012:** Ph.D. scholarship from the Scuola Normale Superiore.

**2004 - 2009:** undergraduate and master's scholarship from the Scuola Normale Superiore.

## Research interests

Moduli theory, algebraic stacks, deformation theory, étale homotopy theory, Grothendieck rings, toric and logarithmic geometry, root stacks, Kato-Nakayama spaces, parabolic sheaves, moduli of sheaves, D-modules.

## Publications

### Research papers

15. *Betti realization of varieties defined by formal Laurent series*, with P. Achinger. *Geom. Topol.* 25 (2021), no. 4, 1919-1978.  
[arXiv:1909.02903](#)
14. *Parabolic semi-orthogonal decompositions and Kummer flat invariants of log schemes*, with S. Scherotzke and N. Sibilla. *Doc. Math.* 25 (2020), 955-1009.  
[arXiv:1803.06398](#)
13. *Gluing semi-orthogonal decompositions*, with S. Scherotzke and N. Sibilla. *J. Algebra* 559 (2020), 1-32.  
[arXiv:1901.01257](#)
12. *Holonomic and perverse logarithmic D-modules*, with C. Koppensteiner. *Adv. Math.* 346 (2019), 510-545.  
[arXiv:1802.00732](#)
11. *Parabolic sheaves with real weights as sheaves on the Kato-Nakayama space*. *Adv. Math.* 336 (2018), 97-148.  
[arXiv:1703.04777](#)
10. *On a logarithmic version of the derived McKay correspondence*, with S. Scherotzke and N. Sibilla. *Compos. Math.* 154 (2018), no. 12, 2534-85.  
[arXiv:1612.08961](#)
9. *Infinite root stacks and quasi-coherent sheaves on logarithmic schemes*, with A. Vistoli. *Proc. Lond. Math. Soc.* 117 (2018), no. 5, 1187-1243.  
[arXiv:1410.1164](#)
8. *Logarithmic Picard groups, chip firing, and the combinatorial rank*, with T. Foster, D. Ranganathan and M. Ulirsch. *Math. Z.* 291 (2019), no. 1-2, 313-327.  
[arXiv:1611.10233](#)
7. *A general formalism for logarithmic structures*, with A. Vistoli. *Boll. Unione Mat. Ital.* 11 (2018), no. 4, 489-502.  
[arXiv:1703.02663](#)
6. *On the motivic class of the classifying stack of  $G_2$  and the spin groups*, with R. Pirisi. *Int. Math. Res. Not.* 2019, no. 10, 3265-3298.  
[arXiv:1702.02649](#)
5. *The motivic class of the classifying stack of the special orthogonal group*, with A. Vistoli. *Bull. Lond. Math. Soc.* 49 (2017), no. 5, 818-823.  
[arXiv:1609.07864](#)
4. *The Kato-Nakayama space as a transcendental root stack*, with A. Vistoli. *Int. Math. Res. Not.* 2018, no. 19, 6145-6176.  
[arXiv:1611.04041](#)
3. *Kato-Nakayama spaces, infinite root stacks, and the profinite homotopy type of log schemes*, with D. Carchedi, S. Scherotzke, and N. Sibilla. *Geom. Topol.* 21-5 (2017), no. 5, 3093-3158.  
[arXiv:1511.00037](#)

2. *Moduli of parabolic sheaves on a polarized logarithmic scheme*. Trans. Amer. Math. Soc. 369 (2017), no. 5, 3483-3545.  
[arXiv:1410.2212](#)
1. *Stacks of uniform cyclic covers of curves and their Picard groups*, with F. Poma and F. Tonini. Algebraic Geometry 2 (2015), no. 1, 91-122.  
[arXiv:1312.5675](#)

### Preprints

1. *On the profinite homotopy type of log schemes*, with D. Carchedi, S. Scherotzke and N. Sibilla. 37 pages, 2019.  
[arXiv:1905.06243](#)

### Book chapters

1. *Deformation theory from the point of view of fibered categories*, with A. Vistoli. Handbook of moduli, Vol. III, 281-397, Adv. Lect. Math. (ALM), 26, Int. Press, Somerville, MA, 2013.  
[arXiv:1006.0497](#)

### Conference proceedings

1. *Batyrev mirror symmetry*, to appear in the Proceedings of the [Superschool on derived categories and D-branes](#), 11 pages, 2017.

## Teaching

### Courses

**Spring 2025:** Geometria Algebraica F (varietà toriche)

**2024/25 - 2020/21:**

Analisi 1, corso di laurea in Informatica, Unipi.

Geometria 2, corso di laurea in Matematica, Unipi.

**Fall 2019:** Analisi 1, corso di laurea in Ingegneria Biomedica, Unipi.

**Fall 2018:** M345P20, Geometry I: Algebraic Curves, Imperial.

**Spring 2018:** Reading course on elliptic curves, SFU.

**Fall 2017:** FAN X99 (section D300), Foundations of analytical and quantitative reasoning, SFU.

**Summer 2016:** Math 200/253 (section 921), Multivariable calculus, UBC.

**Summer 2015:** Math 200/253 (section 921), Multivariable calculus, UBC.

**Spring 2015:** Math 105 (section 206), Integral calculus for commerce and social sciences, UBC.

**Fall 2012:** Mathematics remedial course for first-year students at the Biology Department, Unipi.

### Tutoring

**2010 - 2013:** Tutoring activities for first and second-year students, SNS.

**Spring 2013:** Tutoring for the first-year mathematics course at the Biology Department, Unipi.

**Fall 2012:** Tutoring and exams for the first-year algebra course at the Mathematics Department, Unipi.

## Students

### Triennali

*Francesco Sorce*, 2024.

*Andrea Fornetto, Marco Sanna*, 2023.

*Alberto Landi*, 2022.

*Luca Morstabilini*, 2021.

### Magistrali

*Pietro Leonardini, Filippo Papallo, Paolo Sarti* 2023.

*Davide Gori*, 2021.

### Dottorato

*Pietro Leonardini*, expected 2026.

*Qiangru Kuang*, expected 2024, at SISSA, co-supervised with Nicolò Sibilla.

### Other

*Ribolzi Jules*, summer internship 2023, at Unipi.

*Paula El Khouri*, MSc 2019 at Imperial, co-supervised with Richard Thomas.

*Stefano Romano*, summer 2019 UROP (Undergraduate Research Opportunity) project at Imperial.

*Wes Chorney*, summer 2018 USRA (Undergraduate Student Research Award) project at SFU, co-supervised with Nathan Ilten.

## Teaching workshops

**August 23rd - 25th, 2017:** *Instructional Skills Workshop*, SFU.

## Invited talks

### 2023

Geometry seminar, Roma Tre.

Intervento nella sessione di geometria algebrica al convegno UMI 2023 a Pisa.

Algebraic Geometry and Differential Topology Seminar, Alfréd Rényi Institute of Mathematics, Budapest.

### 2022

Singularities in Paris 2022, Université Paris Cité. 3-hour minicourse on "Log geometry and degenerations".

### 2021

Seminario di algebra e geometria, University of Bologna.

Moduli spaces and logarithmic geometry, Mittag-Leffler Institute.

Algebra and Geometry seminar, Johann Wolfgang Goethe-Universität, Frankfurt (online).

FU algebraic geometry seminar, Freie Universität Berlin (online).

**2020**

Motivic Geometry Seminar, CAS Oslo (online)  
 NT/AG Seminar, Simon Fraser University, Burnaby (online).  
 Seminario di geometria algebrica ed aritmetica, University of Pisa.

**2019**

Friends in Algebraic Geometry, University of Torino.  
 Logarithmic Enumerative Geometry and Mirror Symmetry, MFO Oberwolfach.  
 Seminari di Algebra e Geometria Algebrica, University of Torino.  
 Algebra Seminar, University of Leeds.  
 Geometry and Topology Seminar, Imperial College, London.

**2018**

Algebraic Geometry Seminar, University of Bergen.  
 Algebraic Geometry Seminar, University of Warwick.  
 A Tale of Algebra and Geometry - Vistoli's 60th, University of Pisa.  
 Giornate di Geometria Algebrica ed Argomenti Correlati XIV, University of Genova.  
 Algebra and Algebraic Geometry Seminar, University of Washington, Seattle.  
 Mathematics - String Theory Seminar, IPMU, Tokyo.  
 Workshop: Sheaves, curves and moduli, University of Stavanger.  
 Topology, Arithmetic, and Dynamics Seminar, George Mason University, Fairfax.  
 Algebra & Geometry Seminar, KTH, Stockholm.

**2017**

Algebra and its applications, Florida State University, Tallahassee.  
 Mathematics Colloquium, Florida State University, Tallahassee.  
 Canadian Western Algebraic Geometry Symposium, University of Alberta, Edmonton.  
 Stacks Project Workshop, University of Michigan, Ann Arbor.  
 Algebraic Geometry Seminar, University of Liverpool, Liverpool.  
 NT/AG Seminar, Simon Fraser University, Burnaby.

**2016**

Algebraic Geometry Seminar, University of British Columbia, Vancouver.  
 Seminari della Classe di Scienze, Scuola Normale Superiore, Pisa.  
 Superschool on derived categories and D-branes, University of Alberta, Edmonton.  
 Algebraic Geometry and Number Theory Seminar, Rice University, Houston.  
 Geometry and Topology Seminar, University of Waterloo, Waterloo (Canada).  
 Geometry & Topology Seminar, University of Western Ontario, London (Canada).

**2015**

F.R.A.G.ME.N.T. Seminar, University of Colorado at Boulder, Boulder.  
 Caltech Algebraic Geometry Seminar, Caltech, Pasadena.  
 STAGS (Student Tropical Algebraic Geometry Symposium) 2015, Brown University, Providence.  
 Bellingham Algebraic Geometry Seminar, Western Washington University, Bellingham.  
 CRG "Geometry and Physics" Seminar, University of British Columbia, Vancouver.

**2014**

Workshop of Algebraic Geometry, University of Milano.

## Visits

**March - May 2020:** *Academic visitor* at Imperial College London, visiting Richard Thomas.

**February - August 2019:** *Academic visitor* at Imperial College London, visiting Richard Thomas.

**Spring semester 2012:** *Visiting Student Researcher* at the University of California, Berkeley, under the supervision of Martin Olsson.

**March/April 2009:** *Program Associate* of the Special semester on Algebraic Geometry at the Mathematical Sciences Research Institute (MSRI), Berkeley.

## Invitations to research workshops

**June 16th - 22nd, 2019:** *Logarithmic Enumerative Geometry and Mirror Symmetry*, Mathematisches Forschungsinstitut Oberwolfach.

**May 8th - 12th, 2017:** *CMO workshop: Beyond Toric Geometry*, Casa Matemática Oaxaca.

**April 10th - 14th, 2017:** *AIM workshop: Foundations of tropical schemes*, American Institute of Mathematics, San Jose.

**May 2nd - 6th, 2016:** *CMO workshop: Algebraic, Tropical, and Nonarchimedean Analytic Geometry of Moduli Spaces*, Casa Matemática Oaxaca.

## Service

### *Organizing activities*

**June 23rd - July 4th, 2024:** *Enumerative Geometry and Geometric Representation Theory*, University of Pisa.

**September 25th - 27th, 2024:** *Youngish Researchers Meeting in Algebra and Geometry 2024*, University of Milano.

**September 20th - 22nd, 2023:** *Youngish Researchers Meeting in Algebra and Geometry 2023*, Roma Tre.

**September 28th - 30th, 2022:** *Young Researchers Meeting in Algebra and Geometry 2022*, SISSA.

**July 18th - 22nd, 2022:** *Geometry and arithmetic of moduli spaces*, University of Pisa.

**September 30th - October 1st, 2021:** *Ricercatori in Algebra e Geometria 2020*, Scuola Normale Superiore.

**September 2015 - December 2016:** co-organizer of the Algebraic Geometry Seminar at UBC.

### *Committee work*

**2020 - 2022:** membro della "Commissione Scientifica Area 01".

**2020 - 2022:** membro della "Commissione per il Riesame della Ricerca del Dipartimento".

### *Refereeing and reviewing*

Referee reports and quick opinions for several journals, including: Bollettino dell'Unione Matematica Italiana, Compositio Mathematica, Revista Matemática Iberoamericana, Algebra and Number Theory, Quarterly Journal, Annales de l'Institut Fourier, Crelle, International Mathematics Research Notices, Journal of the Institute of Mathematics of Jussieu, Manuscripta Mathematica, Advances in Mathematics, Mathematica Scandinavica.

Reviewer for a "Vidi research proposal" for the Dutch Research Council.

Last updated: September 20, 2024