

Mattia Talpo

Room II-16 exDMA
Dipartimento di Matematica
Università di Pisa
via Buonarroti 1/c
56127 Pisa, Italy

Phone: +39 050 2213831
Email: mattia.talpo@unipi.it
Homepage: <http://people.dm.unipi.it/talpo>

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

2021/22 - 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.

Mentoring

Davide Gori, tesi magistrale a Unipi.

Luca Morstabilini, tesi triennale a 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

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

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

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

Committee work

December 2020 - present: membro della “*Commissione Scientifica Area 01*”.

November 2020 - present: membro della “*Commissione per il Riesame della Ricerca del Dipartimento*”.

Refereeing and reviewing

Referee for: *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: *Mathematical Reviews*, *Zentralblatt MATH*.

Outreach activities

“University orientation courses” for high school students, organized by the Scuola Normale Superiore

Rovereto 2013: tutor for scientific subjects. Talk: “*Infinity*” in mathematics.

Rovereto 2011: tutor for scientific subjects. Talk: *Modular arithmetic and sums of squares*.

References

Dan Abramovich, Brown University (abrmovic@math.brown.edu)

Kai Behrend, University of British Columbia (behrend@math.ubc.ca)

(teaching) Albert Chau, University of British Columbia (chau@math.ubc.ca)

Nathan Ilten, Simon Fraser University (nilten@sfu.ca)

Martin Olsson, University of California, Berkeley (martinolsson@berkeley.edu)

Angelo Vistoli, Scuola Normale Superiore (angelo.vistoli@sns.it)