

# Mattia Talpo

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## Employment

**January 2017 - present:** PIMS postdoc at Simon Fraser University, Burnaby (Canada).

**January 2015 - December 2016:** postdoc at the University of British Columbia, Vancouver (Canada).

**March 10th, 2014 - November 30th, 2014:** postdoc at the Max Planck Institute for Mathematics, Bonn (Germany).

## Education

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

**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, Pisa (Italy).

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

**2004 - 2009:** Student in Mathematics at the University of Pisa, Pisa (Italy).

**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.

## Awards and scholarships

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

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

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

**2004-2009:** undergraduate and master's scholarship at 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.

## Publications

### Refereed research papers

10. *Infinite root stacks and quasi-coherent sheaves on logarithmic schemes*, with A. Vistoli. Published online in Proc. Lond. Math. Soc., DOI:10.1112/plms.12109, 57 pages, 2018.  
[arXiv:1410.1164](#)
9. *A general formalism for logarithmic structures*, with A. Vistoli. Published online in Boll. Unione Mat. Ital., DOI:10.1007/s40574-017-0149-6, 14 pages, 2017.  
[arXiv:1703.02663](#)
8. *Logarithmic Picard groups, chip firing, and the combinatorial rank*, with T. Foster, D. Ranganathan and M. Ulirsch. To appear in Math. Z., 15 pages, 2016.  
[arXiv:1611.10233](#)
7. *On the motivic class of the classifying stack of  $G_2$  and the spin groups*, with R. Pirisi. Published online in Int. Math. Res. Not., DOI:10.1093/imrn/rnx208, 34 pages, 2017.  
[arXiv:1702.02649](#)
6. *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](#)
5. *The Kato-Nakayama space as a transcendental root stack*, with A. Vistoli. Published online in Int. Math. Res. Not., DOI:10.1093/imrn/rnx079, 32 pages, 2017.  
[arXiv:1611.04041](#)
4. *Kato-Nakayama spaces, infinite root stacks, and the profinite homotopy type of log schemes*, with D. Carchedi, S. Scherotzke, and N. Sibilla. Geometry & Topology 21-5 (2017), 3093-3158.  
[arXiv:1511.00037](#)
3. *Moduli of parabolic sheaves on a polarized logarithmic scheme*. Trans. Amer. Math. Soc. 369 (2017), no. 5, 3483-3545.  
[arXiv:1410.2212](#)
2. *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](#)
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](#)

### Preprints

4. *Additive invariants of logarithmic schemes*, with S. Scherotzke and N. Sibilla. 44 pages, 2018.  
[arXiv:1803.06398](#)
3. *Holonomic and perverse logarithmic  $D$ -modules*, with C. Koppensteiner. 28 pages, 2018.  
[arXiv:1802.00732](#)
2. *Parabolic sheaves with real weights as sheaves on the Kato-Nakayama space*. 33 pages, 2017.  
[arXiv:1703.04777](#)
1. *On a logarithmic version of the derived McKay correspondence*, with S. Scherotzke and N. Sibilla. 52 pages, 2016.  
[arXiv:1612.08961](#)

*Refereed 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 2018:** Instructor, Reading course on elliptic curves, at SFU.

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

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

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

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

**2010 - 2013:** Tutoring activities for first and second-year students at the Scuola Normale Superiore.

**Fall 2012 - Spring 2013:** TA for a first-year mathematics course at the Biology department, University of Pisa (instructor for a “remedial course” and class tutoring).

**Fall 2012:** Tutoring and exam assistance (grading of written exams and oral exams) for a first-year algebra course at the Mathematics department, University of Pisa.

*Teaching workshops*

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

## Talks

*Invited talks***(upcoming)**

**June 2018:** A Tale of Algebra and Geometry, A Conference to celebrate Angelo Vistoli’s 60th Birthday, Pisa (Italy).

**May 2018:** Giornate di Geometria Algebrica ed Argomenti Correlati XIV, Genova (Italy).

**May 2018:** University of Washington, Seattle (USA).

**2018**

**April 24th:** *A logarithmic McKay correspondence and derived invariance for parabolic sheaves*, Mathematics - String Theory Seminar, IPMU, Tokyo (Japan).

**April 19th:** *A logarithmic version of the derived McKay correspondence*, Workshop: Sheaves, curves and moduli, Stavanger (Norway).

**April 6th:** *Topological realization of varieties over  $\mathbb{C}((t))$  via log geometry*, Topology, Arithmetic, and Dynamics Seminar, George Mason University, Fairfax (USA).

**January 10th:** *The class of BG in the Grothendieck ring of stacks*, Algebra & Geometry Seminar, KTH, Stockholm (Sweden).

## 2017

**December 5th:** *A logarithmic version of the derived McKay correspondence*, Algebra and its applications, Florida State University, Tallahassee (USA).

**December 4th:** *Logarithmic Algebraic Geometry, Algebraic Stacks, and their interactions*, Mathematics Colloquium, Florida State University, Tallahassee (USA).

**October 21st:** *A logarithmic version of the derived McKay correspondence*, Canadian Western Algebraic Geometry Symposium, University of Alberta, Edmonton (Canada).

**August 1st:** *Geometric realizations of logarithmic schemes*, Stacks Project Workshop, University of Michigan, Ann Arbor (USA).

**April 25th:** *Divisor theory on tropical and log smooth curves*, University of Liverpool, Liverpool (UK).

## 2016

**September 15th:** *Stability conditions (on root stacks)*, Scuola Normale Superiore, Pisa (Italy).

**April 12th:** *Kato-Nakayama spaces vs infinite root stacks*, Algebraic Geometry and Number Theory Seminar, Rice University, Houston (USA).

**February 12th:** *Parabolic sheaves, root stacks and the Kato-Nakayama space*, Geometry and Topology Seminar, University of Waterloo, Waterloo (Canada).

**February 8th:** *Parabolic sheaves, root stacks and the Kato-Nakayama space*, Geometry & Topology Seminar, University of Western Ontario, London (Canada).

## 2015

**December 1st:** *Kato-Nakayama spaces vs infinite root stacks*, F.R.A.G.ME.N.T. Seminar, University of Colorado at Boulder, Boulder (USA).

**November 16th:** *Logarithmic geometry and some applications*, Caltech Algebraic Geometry Seminar, Caltech, Pasadena (USA).

**April 17th:** *Log geometry (with a slight view toward tropical geometry) and root stacks*, STAGS (Student Tropical Algebraic Geometry Symposium) 2015, Brown University, Providence (USA).

**April 4th:** *Infinite root stacks of log schemes*, Bellingham Algebraic Geometry Seminar, Western Washington University, Bellingham (USA).

## 2014

**December 16th:** *Root stacks of logarithmic schemes and moduli of parabolic sheaves*, Workshop of Algebraic Geometry, Università degli studi di Milano, Milano (Italy).

## Posters

*(Infinite) root stacks of log schemes*, <http://www.sfu.ca/~mtalpo/stuff/posterV5.pdf>, WAGS, Seattle (USA), 2015.

*Moduli of parabolic sheaves*, [http://www.mimuw.edu.pl/~gael/xx/posters/poster\\_talpo.pdf](http://www.mimuw.edu.pl/~gael/xx/posters/poster_talpo.pdf), GAeL XX, Grenoble (France), 2012.

## Other talks

**December 1st, 2017:** *Logarithmic Algebraic Geometry, Algebraic Stacks, and their interactions*, NT/AG seminar at SFU.

**November 6th, 2017:** *A logarithmic version of the derived McKay correspondence*, Algebraic Geometry student seminar at UBC.

**March 22nd, 2017:** *What is a stack, really?*, Algebraic Geometry student seminar at UBC.

**January 19th, 2017:** *Grothendieck rings of varieties and stacks*, NT/AG seminar at SFU.

**September 26th, 2016:** *Taking roots vs taking logarithms*, Algebraic Geometry seminar at UBC.

**July 20th, 2016:** *Batyrev mirror symmetry*, Superschool on derived categories and D-branes at University of Alberta, Edmonton (Canada).

**February 2nd, 2015:** *Infinite root stacks of log schemes*, CRG “Geometry and Physics” seminar at UBC.

**April 28th, 2010:** *Moduli problems and (algebraic) stacks*, Graduate student seminar at the Scuola Normale Superiore.

**February 24th, 2009:** *Deformation theory*, Graduate student algebraic geometry seminar at the Scuola Normale Superiore.

## Visits

**Spring semester 2012:** *Visiting Student Researcher* at the University of California, Berkeley (USA), 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 (USA).

## Invitations to research workshops

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

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

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

## Service

### *Organizing activities*

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

### *Refereeing and reviewing*

Referee for: *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 (Italy), 2013:** tutor for scientific subjects. Talk: *“Infinity” in mathematics*.

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

## References

Dan Abramovich, Brown University ([abrmovic@math.brown.edu](mailto:abrmovic@math.brown.edu))

Kai Behrend, University of British Columbia ([behrend@math.ubc.ca](mailto:behrend@math.ubc.ca))

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

Nathan Ilten, Simon Fraser University ([nilten@sfu.ca](mailto:nilten@sfu.ca))

Martin Olsson, University of California, Berkeley ([martinolsson@berkeley.edu](mailto:martinolsson@berkeley.edu))

Angelo Vistoli, Scuola Normale Superiore ([angelo.vistoli@sns.it](mailto:angelo.vistoli@sns.it))

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