

Tristan OZUCH(-MEERSSEMAN)

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EMPLOYMENT

-	C.L.E. Moore Instructor
2020	MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA

EDUCATION

2020	PhD Student at ENS, Mathematics, Paris, France
2017	Advisor : Olivier Biquard Subject : <i>Completion of the moduli space of Einstein 4-manifolds.</i>
2017	Student at École Normale Supérieure (ENS), Paris, France
2013	2016-2017 PRE-PHD INTERNSHIPS supervised by Olivier Biquard and Aaron Naber 2015-2016 MASTER'S DEGREE (Analysis, Arithmetics, Geometry, Paris 11), with honors 2014-2015 MASTER'S DEGREE (ENS, UPMC), with honors 2013-2014 BACHELOR'S DEGREE (ENS, UPMC), with honors

TEACHING

-	C.L.E. Moore Instructor, MIT, Cambridge, MA, USA
2020	Spring 2021 Course-head: Differential Equations with theory (18.032). Fall 2021 Course-head: Seminar in Analysis (18.104). Summer 2020 Supervision of two undergraduate research internships. Spring 2020 Course-head: Differential Equations with theory (18.032). Fall 2020 TA Multivariable Calculus (18.02).
2020	Teaching assistant, ENS, Paris, France
2017	2020 In charge of the class Mathematics for Humanities . 2019 Coorganizer and jury of the undergraduate theses at ENS. 2019 In charge of the class Mathematics for Humanities . 2018 Coorganizer and jury of the undergraduate theses at ENS. Supervision of three undergraduate theses on level set methods for curve shortening flow and mean curvature flow. 2018 In charge of the class Mathematics for Humanities . 2017 Coorganizer and jury of the undergraduate theses at ENS.

PUBLICATIONS AND PREPRINTS

- 2021 *Integrability of Einstein deformations and desingularizations*, preprint arXiv, arXiv:2105.13193 [math.DG], 2021, submitted
- 2021 (with Alix Deruelle) *Dynamical (in)stability of Ricci-flat ALE metrics along Ricci flow*, preprint arXiv, arXiv:2104.10630 [math.DG], 2021, submitted
- 2021 (with Luca Venturi, Samy Jelassi and Joan Bruna) *Depth separation beyond radial functions*, preprint arXiv, arXiv:2102.01621 [cs.LG], 2021, submitted
- 2021 *Higher order obstructions to the desingularization of Einstein metrics*, preprint arXiv, math.DG, 2012.13316, 2021, submitted
- 2020 *Completion of the Moduli Space of Einstein 4-manifolds.*, PhD thesis, 2020, École Normale Supérieure.
- 2020 (with Alix Deruelle) *A Łojasiewicz inequality for Ricci-flat ALE spaces*, preprint arxiv, math.DG, 2007.09937, 2020.
- 2019 *Noncollapsed degeneration of Einstein 4-manifolds II*, preprint arXiv, math.DG, 1909.12960, 2019, to appear in **Geom. Topol.**
- 2019 *Noncollapsed degeneration of Einstein 4-manifolds I*, preprint arXiv, math.DG, 1909.12957, 2019, to appear in **Geom. Topol.**
- 2019 *Perelman's functionals on cones and Construction of type III Ricci flows coming out of cones*, to appear in **J. Geom. Anal.** 2019, <https://doi.org/10.1007/s12220-018-00131-w>.
- 2019 (with Dmitri Burago and Jinpeng Lu) *How large isotopy is needed to connect homotopic diffeomorphisms (of T^2)*, to appear in **J. Topol. Anal.** 2019, <https://doi.org/10.1142/S1793525320500028>.

RESEARCH VISITS

- August 2021 **Young Research Fellow at University of Münster**
July 2021 *Invited by* : Hans-Joachim HEIN
Toric Einstein metrics.
- December 2019 **Visit at Courant institute**
September 2019 *Advisor* : Bruce KLEINER
Desingularization of Einstein manifolds and Ricci flows.
- July 2017 **Pre-PhD internship at Northwestern University**
September 2016 *Advisor* : Aaron NABER
Study of the degeneration of Einstein 4-manifolds.
- February 2017 **Pre-PhD internship at ENS**
September 2016 *Advisor* : Olivier BIQUARD
Study of the desingularization of Einstein orbifolds and obstructions
- July 2016 **Internship at UC Berkeley/MSRI**
February 2016 *Advisor* : Richard BAMLER
Study of Ricci flows and Perelman's functionals on cones – Conditions on the possible conical singularities of a Ricci flow and construction of asymptotically conical expanding solitons. Presentation of several theorems of the proof of the “Codimension 4 conjecture” at the Graduate student seminar. Proofreading of Richard Bamler's notes on “Structure theory of singular spaces”.
- July 2015 **Internship at Penn. State University**
February 2015 *Advisor* : Dmitri BURAGO
Study of some Geometric flows, Finslerian geometry and other topics in differential geometry. Some isotopy existence results proven (explicit constructions) by geometric flows.
- June 2014 **Undergraduate thesis**
February 2014 *Advisor* : Irène WALDSPURGER
Semester long study of of “Riemannian geometries on the space of plane curves” Peter W. Michor, David Mumford. And redaction of a memoir explaining this article to an undergraduate level written in collaboration with Siarhei Finski.

SEMINARS AND CONFERENCES

AS AN INVITED SPEAKER :

- September 2021 **Geometric analysis seminar**,
Yale University.
Presentation of my work on the degeneration of Einstein 4-manifolds.
- August 2021 **Workshop on Curvature and Global Shape**,
University of Münster.
Presentation of my work on the degeneration of Einstein 4-manifolds.
- July 2021 **International Conference on Geometric Analysis and PDEs**,
Princeton University - Shanghai Jiaotong.
Presentation of my work on the degeneration of Einstein 4-manifolds.
- July 2021 **Curvature constraints and spaces of metrics**, Institut
Fourier Summer School.
Presentation of my work on the degeneration of Einstein 4-manifolds.
- May 2021 **Numerical and Geometric Methods for Ricci-flat Metrics
and Flows**, Simons Collaboration on Special Holonomy in
Geometry, Analysis, and Physics.
Presentation of my work on the degeneration of Einstein 4-manifolds.
- March 2021 **Geometric Analysis Seminar**, University of Chicago.
Presentation of *Higher order obstructions to the desingularization of Einstein metrics*.
- March 2021 **Differential Geometry and Geometric Analysis Seminar**,
Princeton University.
Presentation of *Higher order obstructions to the desingularization of Einstein metrics*.
- November 2020 **UCSD Seminar on Cheeger–Colding theory, Ricci flow, Ein-
stein metrics, and Related Topics**, USCD.
Presentation of *Completion of the moduli space of Einstein 4-manifolds*.
- November 2020 **Stanford's Geometry seminar**, Stanford University.
Presentation of *Higher order obstructions to the desingularization of Einstein metrics*.
- November 2020 **BOWL Seminar**, Brussels, Oxford, Warwick, London.
Presentation of *Higher order obstructions to the desingularization of Einstein metrics*.
- June 2020 **Oberseminar of Differential Geometry**, Münster.
Presentation of *Completion of the moduli space of Einstein 4-manifolds*.
- February 2020 **Séminaire Darboux**, Montpellier.
Presentation of *Noncollapsed degeneration of Einstein 4-manifolds I & II*.
- December 2019 **Differential Geometry Seminar**, UC Berkeley.
Presentation of *Noncollapsed degeneration of Einstein 4-manifolds I & II*.
- November 2019 **Geometric Analysis and Topology Seminar**, Courant insti-
tute, NYU.

- Presentation of *Noncollapsed degeneration of Einstein 4-manifolds I & II*.
- October 2019 **Geometry/Topology Seminar, Stony Brook University.**
Presentation of *Noncollapsed degeneration of Einstein 4-manifolds I & II*.
- May 2019 **Convergence and Low Regularity in General Relativity, Simons Center, Stony Brook.**
Presentation of *Noncollapsed degeneration of Einstein 4-manifolds*.
- March 2019 **Geometry seminar, Bruxelles.**
Presentation of *Noncollapsed degeneration of Einstein 4-manifolds*.
- February 2019 **Geometry seminar, Nantes.**
Presentation of *Noncollapsed degeneration of Einstein 4-manifolds*.
- March 2018 **Masters-PhD meeting, Jussieu.**
Presentation of geometric analysis to masters students through the study of Einstein manifolds and Ricci flows.
- February 2018 **Geometry seminar of IMJ, Paris Diderot.**
Presentation of *Perelman's functionals on cones and Construction of type III Ricci flows coming out of cones*.
- January 2018 **Graduate students seminar, ENS.**
Presentation of the study of singularity formations in 3D Ricci flows.
- April 2016 **Graduate student seminar on the proof of Cheeger-Naber of the codimension 4 conjecture, MSRI, Berkeley.**
Presentation of Colding's volume stability for Gromov-Hausdorff convergence with lower bounds on the Ricci curvature.

AS A PARTICIPANT :

- May 2021 **Atelier sur la Géométrie différentielle et l'analyse globale**
UQAM
- October 2019 **Recent advances in nonlinear problems Symposium**
Graduate Center, CUNY
- May 2019 **Master class in differential geometry : the structure of limit spaces**
Institut Henri Poincaré, Paris
- December 2018 **Geometric analysis at IHP**
Institut Henri Poincaré, Paris
- 27 July 2018 **McGill University Geometric Analysis Workshop 2018**
23 July 2018 McGill University, Montréal
- 1 June, 2018 **Geometric Analysis**
28 May, 2018 ICMS, Edimburgh
- 16 February 2018 **Géométrie : échanges et perspectives**
Institut Henri Poincaré, Paris

9 December 2017 **Riemannian Geometry Past, Present and Future: an homage to Marcel**
6 December 2017 **Berger**, IHES, Bures-sur-Yvette

13 October 2017 **Conference - Geometric Analysis at Roscoff**,
9 October 2017 Centre Henri Lebesgue, Roscoff

21 July 2017 **Summer school in Geometric Analysis**,
10 July 2017 The Fields institute, Toronto
"Ricci flow and intrinsic flat convergence" research team.

July 2016 **Differential geometry semester at MSRI**,
February 2016 MSRI, Berkeley

OTHER SKILLS

Languages French : Native speaker
English : Fluent
Italian : Good command

Activities Competitive swimming, running, cycling, sculpting