

1 Curriculum Vitae

- CONTACT INFORMATION** Matilde Manzaroli
Universität Tübingen
Mathematisches Institut
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72076 Tübingen
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matilde.manzaroli@uni-tuebingen.de
<http://matilde.manzaroli.perso.math.cnrs.fr/>
- RESEARCH INTERESTS** Algebraic geometry, real algebraic geometry, tropical geometry.
- CURRENT JOB** Postdoctoral Research Fellow at Fachbereich Mathematik, University of Tübingen, 2021/2024, with a renewable contract until 2027 with Habilitation as objective.
- WORK EXPERIENCE**
- Postdoctoral Research Fellow at the Department of Mathematics at the University of Oslo, 2019/2021
 - A.T.E.R. (Teacher-Researcher) in Mathematics-Informatics, Nantes University 2018/2019
- EDUCATION**
- PhD in Mathematics, CMLS, École Polytechnique, EDMH, June 2019
- Thesis topic: Real algebraic curves in real del Pezzo surfaces
 - Advisor: Erwan Brugallé
- Master 2 (Erasmus Plus), Institut de Mathématiques de Jussieu - Paris Rive Gauche Sorbonne Université, 2014/2015
- Topic: *Simple Harnack curves*
 - Advisors: Erwan Brugallé and Enrico Arbarello
- Master, Matematica magistrale, Sapienza Università di Roma, 2013/2015
- Bachelor, Matematica Bachelor, Università di Trento, 2010/2013
- Highschool, Liceo Classico G.Cesare-M.Valgimigli, Rimini, 2005/2010
- PUBLICATIONS**
- Articles**
 - (i) **Manzaroli, M.**, “Real algebraic curves of bidegree $(5, 5)$ on the quadric ellipsoid”, *Algebra i Analiz*, 32:2, 2020; *St. Petersburg Math. J.*, 32:2, 2021.
 - (ii) **Manzaroli, M.** “Real algebraic curves on real del Pezzo surfaces”, *International Mathematics Research Notices*, 2022(2):1350-1413, 2022.
 - (iii) **Kummer, M., Le Texier, C. and Manzaroli, M.** “Real-Fibered Morphisms of del Pezzo Surfaces and Conic Bundles”, *Discrete & Computational Geometry*, 69: 849-872, 2023.
 - (iv) **Manzaroli, M.** “Obstructions for the existence of separating morphisms and totally real pencils”, arXiv 2211.16805 (to appear in the *Annales de la Faculté des Sciences de Toulouse*).
 - PhD thesis, Manzaroli, M.** “Real algebraic curves in real del Pezzo surfaces”, University di Paris-Saclay, École polytechnique, France, 2019.
<https://theses.hal.science/tel-02270776>

PREPRINTS

1. **Manzaroli, M.** “Real plane separating $(M - 2)$ -curves of degree d and totally real pencils of degree $(d - 3)$ ”, arXiv 2404.09671.
2. **Ambrosi, E. and Manzaroli, M.** “Betti numbers of real semi-stable degenerations via real logarithmic geometry”, arXiv 2211.12134 (submitted).

IN PREPARATION

1. **Ambrosi, E. and Manzaroli, M.** “Tropical homology over discrete valued fields”.

GRANTS AND AWARDS

- Funded from 01/04/2024 to 30/09/2024 by DFG, German Research Foundation (Deutsche Forschungsgemeinschaft), Project- ID 286237555, TRR 195, “Symbolic Tools in Mathematics and their Application”.
- Athene grant from 01/01/2022 to 31/12/2023.
- Kovalevskaya Travel Grant 2022.
- ECOS NORD program 2017/2018.

INVITED CONFERENCE TALKS

2023/2024:

- Les journées du GDR, University of Poitiers, France.

2022/2023:

- Topology and real algebraic geometry in low dimension, on the occasion of the 75th anniversary of Oleg Viro, Institut Mittag-Leffler, Stockholm, Sweden.
- New Directions in Real Algebraic Geometry, Oberwolfach, Germany.
- Real Aspects of Geometry, in honour of Alexander Degtyarev’s 60th birthday, CIRM, Luminy, France.
- Journées réelles, Angers University, France.
- Birational Geometry and Regulous functions, Le Croisic, France.

2021/2022:

- Conference in enumerative, real and birational geometry, Le Croisic, France.
- Women in Algebra and Symbolic Computations, Bad Dürkheim, Germany.

2020/2021:

- Workshop on “Real Algebraic and Convex Geometry” (online).
- Facets of Real Algebraic Geometry, in honour of Viatcheslav Kharlamov’s 70th birthday, Nantes University, France.
- MEGA 2021 (online).
- 3rd BYMAT Conference (online).

2019/2020:

- Einstein Workshop on Real Applied Algebraic Geometry, TU Berlin, Germany.
- Tropical Methods in Real Algebraic Geometry, Casa Matematica Oaxaca, Mexico.

2018/2019:

- Séminaire - Journées réelles du CHL, Nantes University, France.

2017/2018:

- Université de Toulouse Paul Sabatier, Tropical Geometry in Europe, France.
- University of Oslo, Workshop: Real algebraic and tropical mathematics, Norway.
- Mini-Workshop Algebraic Geometry, Institut de Mathématiques de Bourgogne, France.

INVITED SEMINAR TALKS

2023/2024:

- Séminaires of the group Géométrie, Algèbre, Dynamique et Topologie, University of Dijon, France

2022/2023:

- Séminaire AFRIMath de Géométrie et Topologie (online)
- Séminaires systèmes dynamiques et géométrie, Angers University, France.
- Seminar Algebra and Combinatorics, Leipzig University, Germany.

- TüSS Tübingen-Stuttgart Seminar, Tübingen University, Germany.

2021/2022:

- Tropical Geometry in Frankfurt (TGiF)-Seminar, Frankfurt University, Germany.
- AfMS (University of Nairobi, Kenya), African Math Seminar (online).
- Oberseminar Kombinatorische Algebraische Geometrie, Tübingen University.
- Seminari di Geometria Algebraica, Università degli studi di Roma "Tor Vergata", Italia.
- UGA (University of Georgia), Algebraic Geometry Seminar (online).

2020/2021:

- Séminaire de topologie, géométrie et algèbre de Nantes et Séminaire de géométrie algébrique de Angers (online).
- Latin American Geometria Algebraica Real y Tropical Seminar (online).
- Seminario de Álgebra Commutativa y Geometria Algebraica, CIMAT (online).

2019/2020:

- Algebra seminar, University of Oslo, Norway.

2018/2019:

- Séminaire Singularité et Applications, Université de Lille, Laboratoire Paul Painlevé, France.
- Séminaire Géométrie, Université Lyon 1, Institut Camille Jordan, France.
- Universität Basel, "Seminar Algebra and Geometry", Switzerland.
- Angers University, "Séminaire de géométrie algébrique", France.

2017/2018:

- University of Warwick, Junior Algebraic geometry Warwick seminar, England.
- Séminaire de Géométrie Tropicale, Institut de Mathématiques de Jussieu - Paris Rive Gauche Sorbonne Université, France.
- Séminaire de topologie, géométrie et algèbre, Laboratoire de Mathématiques Jean-Leray, France.
- Seminario Singularidades, UNAM, Cuernavaca, Mexico.

VISITING

2022/2023:

- Nantes University, France. Host: Erwan Brugallé;
- CAS, Oslo, Norway. Host: Kris Shaw.

2021/2022

- Firenze University, Italy. Host: Arthur Renaudineau.

TEACHING

Research lectures

2023

Mini-Course at the annual conference AFRIMath 2023, IMSP, Porto Novo, Bénin.

2023

Mini-Course (two talks 1h30) on the article "Betti numbers of real semi-stable degenerations via real logarithmic geometry" of Ambrosi, Manzaroli, Lille University, France.

2023

Mini-Course, "Involutions in Gauge theory and algebraic geometry", Nantes University, France.

Lectures and exercise sessions

2021/2024

Postdoc , Universität Tübingen, Department of Mathematics, Germany.

2018/2019

ATER, Nantes University, Mathematics Department and Informatics Department,
France.

2015/2018

Tutor at IUT d'Orsay , Informatics, France.

Course	Level	year	Type	Uni
Seminar: Euklid trifft Bezout	Master	2023/2024	PS	Tüb
Repetitorium: Mathematik für Informatik 1 Analysis	Bachelor	2023/2024	TD	Tüb
Real algebraic geometry	Master	2023	Course	üb
Algebraic number theory	Bachelor	2022/2023	TD	Tüb
Riemann surfaces	Master	2022/2023	TD	Tüb
Geometrische Gruppentheorie	Master	2022	TD	Tüb
Seminar: Torische Ideale	Bachelor	2022	PS/TP	Tüb
Algebraic Curves and Riemann surfaces	Master	2021/2022	TS	Tüb
Proseminar: Matroide	Bachelor	2021/2022	PS	Tüb
Toric Geometry	Bachelor/Master	2021	TD	Tüb

Table 1: *Course= complete preparation of a course and of exercise sessions; *TD=tutoring; *TP=tutoring in computer room; *PS=responsible for the student seminar

Course	Level	Year	Type	Uni
Outils de calcul pour les sciences	Bachelor	2018/19	TD	Nantes
Mathématiques I	Bachelor	2018/19	TD	Nantes
Langages de scripts	Master	2018/19	TP	Nantes
Informatique fondamentale I	Bachelor	2018/19	TP	Nantes
Mathématiques pour l'informatique I	Bachelor	2018/19	TD	Nantes
Compléments Mathématiques et Informatiques	Bachelor	2018/19	TD	Nantes
Logique, dénombrement et suites numériques	Bachelor	2018/19	TD	Nantes
Analyse et méthodes numériques	I year	2018	TD	IUT
Algèbre linéaire	I year	2018	TD	IUT
Graphes, langages et automates	II year	2018	TD	IUT
Modélisation	II year	2017	TS,TP	IUT
Analyse et méthodes numériques	I year	2016	TD	IUT
Algèbre linéaire	I year	2016	TD	IUT

Table 2: *Course= complete preparation of a course and of exercise sessions; *TD=tutoring; *TP=tutoring in computer room; *PS=responsible for the student seminar

MATHEMATICS
RESEARCH
COOPERATION IN
DEVELOPING
COUNTRIES

- Annual Conference AFRIMath 2023, IMSP, Porto Novo, Bénin.
- CIMPA-ZIGUINCHOR 2020, Quelques aspects réels et effectifs de la géométrie algébrique, Université Assane Seck de Ziguinchor, Sénégal (canceled because of the sanitary crisis).
- Assistant at CIMPA Research School on Combinatorial and Computational Algebraic Geometry, University of Ibadan, Oyo State, Nigeria (2017).

OTHER

EXPOSITORY TALKS

2022/2023:

- "Condensed abelian groups", Working group on "Condensed Mathematics" by Clausen and Scholze, Tübingen University, Germany.

2020/2021:

- Birational invariance of the tight approximation property, Working group on "The tight approximation property" by O. Benoist and O. Wittenberg, Strasbourg University, France.
- Graph complexes, JAVA: Algebraic curves, their moduli, and tropical geometry, Tatihou Island, France.

2016/2017:

- Journée "Filles et mathématiques", École Polytechnique, France.
- Topology of real algebraic space curves, Reading Group on Real Algebraic Geometry, Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany
- Invariant de Brown et extensions de la congruence de Rokhlin (d'après Mikhalkin), Séminaire de Géométrie Tropicale Institut de Mathématiques de Jussieu - Paris Rive Gauche Sorbonne Université, France.
- Construction de types topologiques réels via les dessins d'enfant, Séminaire doctorants P7- Bourbakettes, Université Paris-Diderot, France.
- Real algebraic curves on $\mathbb{R}P^2$, Séminaire des thésards, Institut des Mathématiques de Bourgogne, France.
- Real algebraic curves on $\mathbb{R}P^2$, École Polytechnique, Séminaire des thésards, CMAP CMLS, Palaiseau, France.

SEMINARS,

COURSES,

CONFERENCES,

WORKING GROUP

2023/2024:

- Introduction to Neural Networks, University of Tübingen, Germany.
- "Real and Logarithmic Enumerative Geometry", Oberwolfach, Germany
- Conference CAVARET : "Curves, Abelian Varieties and Related Topics", University of Barcelona, Spain

2022/2023:

- Working group on "Condensed Mathematics" by Clausen and Scholze, Tübingen University, Germany.

2021/2022:

- Working group on "The tight approximation property" by O. Benoist and O. Wittenberg, Strasbourg University, France.

2020/2021:

- Summer school of the ANR: Symplectic, Real, and Tropical aspects of Enumerative Geometry, Le Croisic, France.
- "Topics in Matroid Theory", online course of Matt Baker, School of Mathematics Georgia Institute of Technology.

2019/2020:

- Tropical Geometry in Europe, Nantes University, France.
- Lucia Geometrica, Stockholm University, Sweden.
- A Tropical Day at the MPIM, Bonn, Germany.
- Einstein Workshop on Real Applied Algebraic Geometry, TU Berlin, Germany.
- Tropical Methods in Real Algebraic Geometry, Casa Matematica Oaxaca, Mexico.

- Tercer Encuentro Tropical, Unidad Cuernavaca del Instituto de Matematicas (UNAM), Cuernavaca, Mexico.

2018/2019:

- IMJ-PRG summer school [New perspectives in Gromov-Witten theory](#), Institut de Mathématiques de Jussieu - Paris Rive Gauche Sorbonne Université, France.
- [ASGARD 2019: Around Remarkable Discrete Mathematics](#), University of Oslo, Norway.
- Tropical Geometry in Europe, Nantes University, France.

2017/2018:

- Tropical Geometry in Europe, Université de Toulouse Paul Sabatier, France.
- [ASGARD 2018: Real algebraic and tropical mathematics](#), University of Oslo, Norway.
- Congreso nacional de la sociedad matemática mexicana, Ciudad de Mexico, Mexico.
- Invited by Lucia López de Medrano, one month stay at the Unidad Cuernavaca del Instituto de Matemáticas, UNAM, Mexico (ECOS NORD program).
- Perspectives en géométrie réelle, CIRM, Luminy, France.

2016/2017:

- [Berkovich spaces Tropical geometry and Model theory](#), Universidad de los Andes, Bogotá, Colombia.
- [Séminaires de Géométrie Tropicale](#), Institut de Mathématiques de Jussieu - Paris Rive Gauche Sorbonne Université, France.
- [Reading Group on Real Algebraic Geometry](#), Max Planck Institute for Mathematics in the Sciences, Leipzig, Germany.
- [Cremona Conference](#), University of Basel, Switzerland.

2015/2016

- [Tropical Geometry in Europe](#), Institut de Mathématiques de Toulouse, France.
- [Singularités et Géométrie Tropicale](#), Université Paris 7 (Paris-Diderot), France.
- [Journées Louis Antoine](#), Université Rennes I, France.
- Les bases pour le doctorant-Enseignant débutant (The basics of tutoring), Université Paris-Saclay, France.

SERVICE	Representative of the PhD students to the laboratory council, CMLS, École polytechnique, Palaiseau, France Dec 2016 – Sep 2018
LANGUAGES	Italian (mother tongue), English, French, German (level A2/B1), notions of Spanish.
PROGRAMMING LANGUAGES	Python, Bash, Isetl, Fortran.