

Lorenzo Fantini

Curriculum Vitæ



Personal Details

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Date of birth **20.05.1986**
Place of birth **Feltre (BL), Italy**

Current Affiliation

Postdoctoral Research Fellow of the Alexander von Humboldt Foundation at the Goethe-Universität Frankfurt am Main.

Work address **FB12 - Institut für Mathematik
Goethe-Universität Frankfurt
Robert-Mayer-Str. 6-8
60325 Frankfurt am Main - Germany**

Research Interests

I'm interested in algebraic geometry. More specifically, I like to apply non-archimedean analytic geometry, especially from the point of view of Berkovich, to problems in birational geometry (singularity theory, Lipschitz geometry, motivic integration), arithmetic geometry (models of curves and ramification), and combinatorics (tropical geometry).

Work Experience

- 10/2019 – today **Humboldt postdoctoral fellow**, *Institut für Mathematik, Goethe-Universität Frankfurt am Main (Germany)*.
Supported by the Alexander von Humboldt Foundation and hosted in Frankfurt by Prof. A. Werner.
- 10/2018 – 09/2019 **Postdoctoral fellow**, *Institut de Mathématiques de Marseille, Aix-Marseille Université (France)*.
Supported by the ANR LISA, coordinated by Prof. A. Pichon.
- 10/2016 – 09/2018 **Postdoctoral fellow**, *Institut Mathématique de Jussieu, Sorbonne Université (France)*.
Supported by the ANR DEFIGEO, coordinated by Prof. F. Loeser.

11/2014 – 09/2016 **Postdoctoral fellow**, *Centre de Mathématiques Laurent Schwartz, École polytechnique (France)*.
Supported by the ERC starting grant “nonarcomp” of Prof. C. Favre.

Education

10/2010 – 10/2014 **Ph.D. fellow**, *University of Leuven (Belgium)*.
Title of dissertation: “Normalized Berkovich spaces and surface singularities”.
Advisor: Prof. J. Nicaise.
PhD Jury: Prof. N. Budur, Prof. A. Ducros, Prof. P. Igodt, Prof. S. Payne, Prof. M. Temkin, Prof. W. Veys.
Supported by the Fund for Scientific Research - Flanders (G.0415.10).
2008 – 2010 **Master in Mathematics**, *ALGANT Erasmus Mundus Master Project*.
2009–2010: *Université Paris-Sud (Orsay, France)*.
2008–2009: *Università degli Studi di Padova (Italy)*.
2005 – 2010 **Galilean School of Higher Education**, *Padova (Italy)*.
2005 – 2008 **Bachelor in Mathematics**, *Università degli Studi di Padova (Italy)*.

Preprints and Publications

1. André Belotto da Silva, Lorenzo Fantini, and Anne Pichon. Lipschitz normal embeddings and polar exploration of complex surface germs. *Preprint arXiv:2006.01773*, 33 pages, 2020.
2. Lorenzo Fantini and Daniele Turchetti. Triangulations of non-archimedean curves, semi-stable reduction, and ramification. *Preprint arXiv:1911.04407*, 40 pages, 2019.
3. André Belotto da Silva, Lorenzo Fantini, and Anne Pichon. Inner geometry of complex surfaces: a valuative approach. *Preprint arXiv:1905.01677*, 42 pages, 2019.
4. Lorenzo Fantini and Michel Raibaut. Motivic and analytic nearby fibers at infinity and bifurcation sets. *To appear in Arc Schemes and Singularities, World Scientific*, 18 pages, 2020.
5. Lorenzo Fantini, Charles Favre, and Matteo Ruggiero. Links of sandwiched surface singularities and self-similarity. *Manuscripta Math.*, 162(1-2):23–65, 2020.
6. Lorenzo Fantini and Daniele Turchetti. Galois descent of semi-affinoid spaces. *Math. Z.*, 290(3-4):1085–1114, 2018.
7. Lorenzo Fantini. Normalized Berkovich spaces and surface singularities. *Trans. Amer. Math. Soc.*, 370(11):7815–7859, 2018.
8. Man-Wai Cheung, Lorenzo Fantini, Jennifer Park, and Martin Ulirsch. Faithful realizability of tropical curves. *International Mathematics Research Notices*, 2016(15):4706–4727, 2016.

9. Lorenzo Fantini. Normalized non-archimedean links and surface singularities. *Comptes Rendus Mathématique*, 352(9):719–723, 2014.

Teaching Experiences

- 2018 – 2019 **Exercise sessions for “Analysis”**, 2nd year Bachelor, École Polytechnique.
- 2013 – 2014 **Exercise sessions for “Algebraic Number Theory”**, 1st year Master in Mathematics, University of Leuven.
- 2012 – 2013 **Exercise sessions for “Algebraic Geometry”**, 1st year Master in Mathematics, University of Leuven.
- 2011 – 2012 **Exercise sessions for “Algebraic Geometry”**, 1st year Master in Mathematics, University of Leuven.
- 2010 – 2011 **Co-organization and co-supervision for “Advanced Course in Algebraic Geometry”**, 2nd year Master in Mathematics, University of Leuven.
- 2010 – 2011 **Exercise sessions for “Algebraic Number Theory”**, 1st year Master in Mathematics, University of Leuven.

Talks – Past and Upcoming

- 02/2020 **Tohoku University**, *Conference on Singularities and Arithmetics*, “Triangulations of non-archimedean curves, semi-stable reduction, and ramification”.
- 01/2020 **Goethe-Universität Frankfurt**, *Oberseminar Algebra und Geometrie*, “Non-archimedean links of singularities”.
- 10/2019 **École normale supérieure, Paris**, *Séminaire de Géométrie et Théorie des Modèles*, “A valuative approach to the inner geometry of surfaces”.
- 06/2019 **Université Savoie Mont Blanc, Chambéry**, *Séminaire de Géométrie*, “Une approche valuative de la géométrie interne des surfaces complexes”.
- 06/2019 **Université Aix-Marseille**, *Workshop on the Lipschitz Geometry of Singularities*, “A valuative approach to the inner geometry of complex surfaces”.
- 05/2019 **Université de Lille**, *Valuations and birational geometry*, “Inner metric structure of complex surface singularities”.
- 04/2019 **Université de Bordeaux**, *Séminaire Géométrie*, “Géométrie Lipschitz des singularités des surfaces et valuations”.
- 03/2019 **Université de Nice Sophia-Antipolis**, *Séminaire d’algèbre, topologie et géométrie*, “Géométrie Lipschitz des singularités des surfaces et valuations”.
- 10/2018 **Casa Matématica Oaxaca**, *BIRS-CMA Workshop Lipschitz Geometry of Singularities*, “Non-archimedean links of singularities”.
- 02/2018 **IHP, Paris**, *Junior seminar on Model Theory, Combinatorics and Valued fields*, “Motivic and non-archimedean invariants of singularities at infinity”.

- 03/2017 **Universität Tübingen**, *Tropical curve counts, motivic integration, nonarchimedean geometry and relations with motivic nearby cycles functor*, “Self-similarity of weighted graphs and non-archimedean links of surface singularities”.
- 11/2016 **Université de Rennes 1**, *Conference Nash : schéma des arcs et singularités*, “A non-archimedean characterization of essential valuations of surfaces”.
- 10/2016 **Université de Lille**, *Special day on motivic integration and non-archimedean geometry*, “Entrelacs non archimédiens et autosimilarité”.
- 03/2016 **Université de Rennes 1**, *Séminaire de Géométrie et Singularités*, “Entrelacs non archimédiens de singularités”.
- 02/2016 **Université Savoie Mont Blanc, Chambéry**, *Séminaire de Géométrie*, “Entrelacs non archimédiens de singularités”.
- 02/2016 **Université de Montpellier**, *Séminaire de Géométrie Algébrique*, “Entrelacs non archimédiens de singularités”.
- 01/2016 **Universität Freiburg**, *Oberseminar Algebra*, “Non-archimedean links of singularities”.
- 12/2015 **Université de Strasbourg**, *Journée jeunes chercheurs en arithmétique et géométrie algébrique*, “Entrelacs non archimédiens de singularités”.
- 12/2015 **Université de Caen Normandie**, *Séminaire de Théorie des Nombres*, “Entrelacs non archimédiens de singularités”.
- 11/2015 **École polytechnique, Paris**, *Journée TropiX*, “Dual graphs of surface singularities and self-similarity”.
- 05/2015 **Université de Lille**, *Séminaire Géométrie des espaces singuliers*, “Réalisation de courbes tropicales”.
- 04/2015 **Aix-Marseille Université**, *Séminaire Géométrie, Dynamique et Topologie*, “Espaces de Berkovich et singularités”.
- 03/2015 **Université Claude Bernard Lyon 1**, *Séminaire Géométries*, “Entrelacs non archimédiens et singularités des surfaces”.
- 03/2015 **Université Pierre et Marie Curie - Paris 6**, *Séminaire de Géométrie Tropicale*, “Réalisation fidèle de courbes tropicales”.
- 02/2015 **CIRM, Luminy**, *Young researchers in singularities*, “Non-archimedean links of surface singularities and log essential valuations”.
- 02/2015 **Universidad de Granada**, *Congreso de la Real Sociedad Matemática Española*, “Non-archimedean links of surface singularities and log essential valuations”.
- 01/2015 **École polytechnique, Paris**, *Séminaire de Géométrie Ergodique*, “Entrelacs non archimédiens et singularités des surfaces”.
- 05/2014 **Universität Regensburg**, *Oberseminar Arakelov-Theorie*, “Normalized Berkovich spaces and surface singularities”.

- 03/2014 **Université Paris Diderot - Paris 7**, *Séminaire sur les singularités*,
“Espaces de Berkovich normalisés et singularités des surfaces”.
- 01/2014 **Joint Mathematics Meeting of the American Mathematical Society, Baltimore (MD)**, *AMS Contributed Paper Session in Algebraic Geometry*, “Normalized Berkovich spaces and surface singularities”.
- 05/2013 **IHP, Paris**, *Séminaire RéGA*, “Espaces de Berkovich, valuations et singularités”.

Language Skills

Italian	Mother tongue	
English	Fluent	<i>TOEFL score: 112/120, obtained in June 2009</i>
French	Fluent	
Spanish	Intermediate	