

Filip Misev

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born 1986

nationality Swiss

languages German (native), English (fluent), French (fluent).

Research interests

Low dimensional topology and geometry (knots, surfaces, knot concordance), singularity theory.

Education

2012 – 2016 PhD in Mathematics advised by Prof. Sebastian Baader at the University of Bern.
Thesis: *On the plumbing structure of fibre surfaces*.

2008 – 2012 MSc in Mathematics at the University of Basel, Master thesis advised by
Prof. Norbert A'Campo on *periodic points and symplectic monodromy of singularities*.

2005 – 2008 BSc in Mathematics with minor in Physics at the University of Basel.

Professional experience

04.2020 – 03.2024 Wissenschaftlicher Mitarbeiter, Fakultät für Mathematik der Universität Regensburg.

03.2018 – 03.2020 Postdoc at the Max Planck Institute for Mathematics, Bonn.

09.2016 – 02.2018 Postdoc at Aix-Marseille University, research group of Prof. Michel Boileau, Ana Lecuona,
Benjamin Audoux. Funding: Swiss National Science Foundation, early postdoc.mobility.

2012 – 2016 Teaching assistant at the Mathematical Institute of the University of Bern.

2008 – 2012 Teaching assistant at the Mathematical Institute of the University of Basel.

2006 Short term training at the cancer research laboratory at the Manitoba Institute of Cell
Biology (MICB) in Winnipeg, Canada.

2005 Job at Medika AG pharmaceuticals, Aesch, Switzerland (today Teva Pharma AG, Basel);
administration of pharmaceutical registration documents.

Teaching experience

Lectures

2020 Elementare Zahlentheorie (Lehramt Grund- Mittel- und Realschule)

2019 Algebraic curves, topics course for master students at the University of Bonn
(2h per week, 14 weeks)

before 2019 Occasional lecture substitution in first year courses.
90 minutes lecture on fibred knots during master course on Invariants of knots and
3-manifolds and knot invariants at the University of Bonn, by W. Lück and P. Teichner.

Service lectures Excercise classes in mathematics for natural sciences

Excercise classes Linear Algebra, Analysis, Complex analysis, Geometry, Differential geometry,
Riemannian geometry, Topology

Seminar Algebraic curves

Publications and preprints

- [8] (with S. Baader, R. Blair and A. Kjuchukova): *The bridge number of arborescent links with many twigs* (2020), preprint, arXiv:2008.00763.
- [7] (with G. Spano): *Tight fibred knots without L-space surgeries* (2019), preprint, arXiv:1906.11760.
- [6] (with S. Baader, A. Kjuchukova, L. Lewark and A. Ray): *Average four-genus of two-bridge knots* (2019), accepted for publication in Proceedings of the American Mathematical Society, arXiv:1902.05721.
- [5] (with A. Pichon): *Lipschitz normal embedding among superisolated singularities* International Mathematics Research Notices, (2019), rnz221, arXiv:1810.10179.
- [4] *On families of fibred knots with equal Seifert forms* (2017), accepted for publication in Communications in Analysis and Geometry, arXiv:1703.07632.
- [3] (with S. Baader): *On the stabilisation height of fibre surfaces in S^3* Journal of Knot Theory and Its Ramifications, **27** (2018), no. 3, p.1840001, arXiv:1607.00857.
- [2] *Hopf bands in arborescent Hopf plumbings* Osaka Journal of Mathematics, **56** (2019), no. 2, pp. 375-389, arXiv:1601.01933.
- [1] *Cutting arcs for torus links and trees* Bulletin de la Société Mathématique de France, **145** (2017), no. 3, pp. 575-602, arXiv:1409.0644.

Invited talks and talks at conferences

- 01.-14.06. 2020 *Fibred knots, positivity and L-spaces*, virtual, NCNGT (two pre-recorded 30 minute talks).
- 28.11. 2019 *Positive fibred knots and the unknotting number*, Bern, Mini Swiss Knots workshop.
- 22.11. 2019 *Positive fibred knots and the unknotting number*, Neuchâtel, InterCity Seminar.
- 21.10. 2019 *An introduction to knot concordance*, Regensburg, Low-dimensional topology workshop.
- 16.09. 2019 *Unknot positive knots!*, MPIM Bonn, 5 min talk at 4-manifolds workshop.
- 08.08. 2019 *Fibre surfaces, knots, and elastic strings*, MPIM Bonn, Oberseminar-Kolloquium.
- 24.07. 2019 *Fibred knots, positivity and concordance*, Uni Regensburg, Oberseminar Globale Analysis.
- 16.07. 2019 *Algebraic knots, L-spaces and concordance*, ETH Zürich, Swiss Knots 2019.
- 04.03. 2019 *Lipschitz normal embedding among superisolated singularities*, Reims, WinterBraids IX.
- 25.02. 2019 *Metric distortion of algebraic varieties*, Universität Bern, Mathematisches Kolloquium.
- 03.12. 2018 *Nœuds fibrés, positivité et concordance*, I2M Marseille, Séminaire GDT.
- 26.10. 2018 *Lipschitz normal embeddings among superisolated singularities*, CMO-BIRS Oaxaca, workshop on Lipschitz geometry of singularities.
- 12.04. 2018 *Fibred knots and concordance*, MPIM Bonn, MPI-Oberseminar.
- 20.03. 2018 *Sur la concordance des nœuds fibrés*, LMNO Caen, Séminaire Algèbre et Géométrie.
- 15.02. 2018 *Sur les points périodiques d'une monodromie*, I2M Marseille, Séminaire Singularités.
- 01.12. 2017 *Sur la concordance des nœuds fibrés*, Institut Fourier Grenoble, Séminaire de Topologie.
- 20.10. 2017 *The stabilisation height of fibre surfaces*, Mathematisches Institut Köln, Oberseminar GTA.
- 19.10. 2017 *Introduction to fibred knots*, Mathematisches Institut Köln, graduate lecture.
- 23.03. 2017 *Sur la concordance des nœuds fibrés*, IMAG Montpellier, Séminaire Topologies.
- 21.11. 2016 *La structure de plombage des nœuds fibrés*, I2M Marseille, Séminaire GDT.
- 18.01. 2016 *Hopf bands and quadratic forms*, IRMA Strasbourg, Séminaire GT3.
- 06.11. 2015 *Hopf bands and quadratic forms*, Institut Fourier Grenoble, Séminaire de Topologie.
- 18.05. 2015 *Knots and surfaces*, uB Dijon, Séminaire étudiants.
- 24.03. 2015 *Bandes non-nouées, surfaces fibrées et groupes de Coxeter*, IMJ-PRG Paris Jussieu, Séminaire de Topologie.
- 16.02. 2015 *Cutting and glueing fibre surfaces*, Pau, Winterbraids V.
- 09.04. 2014 *Nœuds fibrés*, Rennes, Séminaire "Pampers" des jeunes chercheurs en géométrie.
- 05.03. 2013 *What is...Monodromy?* ETH Zürich, Graduate colloquium.

Seminar talks

2011 – now	Seminar and graduate colloquium contributions on various topics, among others:	
Lefschetz fixed point theorem	quasimorphisms and laws after D. Calegari	monodromy of singularities
plane algebraic curves	vector bundles and K-theory	fibred knots
h-principle	twisted bands in embedded surfaces	Mostow's rigidity theorem
trisections of 4-manifolds	hyperbolic volume of alternating knots	Basel problem

Selected conferences and schools attended

01.-14.06. 2020	[virtual] NCNGT: Nearly Carbon Neutral Geometric Topology Conference (two pre-recorded 30 min talks)
17.-21.02. 2020	Pisa: WinterBraids X
28.11. 2019	Bern: Mini Swiss Knots, one-day workshop (plenary talk)
24.-16.10. 2019	Regensburg: Arbeitstagung on foliations
21.-23.10. 2019	Regensburg: Low-dimensional topology workshop (plenary talk)
16.-20.09. 2019	Bonn - MPIM: Workshop on 4-manifolds (plenary 5 min talk)
16.-19.07. 2019	Zürich - Swiss Knots 2019 (plenary talk)
17.-21.06. 2019	Le Croisic (Nantes) - Knot concordance and low-dimensional manifolds
04.-07.03. 2019	Reims - LMR-FRE: WinterBraids IX (plenary talk)
22.-26.10. 2018	Oaxaca - CMO-BIRS: Workshop on Lipschitz geometry of singularities (plenary talk)
12.-16.02. 2018	Marseille - CIRM: Knotted embeddings in dimensions 3 and 4
05.-09.02. 2018	Marseille - CIRM: Winterbraids VIII
29.01.-02.02. 2018	Marseille - CIRM: Representation spaces, Teichmüller theory, and their relationship with 3-manifolds from the classical and quantum viewpoints
07.-10.11. 2017	Marseille: Lipschitz geometry of singularities
07.-09.06. 2017	Bern - Swiss Knots 2017
08.-11.05. 2017	Marseille: Workshop on profinite groups and topology
30.01.-03.02. 2017	Cambridge - INI: 3-manifold workshop
17.-21.10. 2016	Bonn - MPIM: Conference on 4-manifolds and knot concordance
06.-10.06. 2016	Dubrovnik - IUC: Perspectives in topology and geometry of 4-manifolds
20.-24.07. 2015	Edinburgh - ICMS: Topological methods in singularity theory
01.-03.06. 2015	Genève - Swiss Knots 2015
16.-19.02. 2015	Pau - Winterbraids V (plenary talk)
04.-08.08. 2014	Providence - ICERM: Combinat. Link Homology Theories, Braids, and Contact Geometry
13.-17.01. 2014	La Llagonne - Winter school on Jones polynomial and hyperbolic volume
24.-28.06. 2013	Toulouse - Low-dimensional Topology and Geometry in Toulouse
03.-07.06. 2013	Cortona - INdAM Meeting: Geometric topology in Cortona
10.-11.09. 2012	Bern - Workshop: Algebra and Geometry
02.-08.09. 2012	Les Diablerets - The h-principle Seminar and autumn school
07.-09.06. 2012	Strasbourg - 89 ^e rencontre entre physiciens théoriciens et mathématiciens: Invariants quantiques des 3-variétés en mathématiques et en physique
19.-23.09. 2011	Mainz - Autumn School: Topology of Singularities
10.-15.07. 2011	Aberdeen - LMS-EPSRC: Short Course on Symplectic Geometry
08.-12.03. 2010	Higashi-Hiroshima - Graduate School of Advanced Sciences of Matter, Hiroshima University - Workshop: Branched Coverings, Degenerations and Related Topics 2010
25.05.-03.06.2009	Edmonton - University of Alberta - PIMS Algebra Summer School
28.04.-03.05.2008	Strasbourg - Semaine spéciale Géométrie et Théorie des Groupes