Florent Schaffhauser

Universität Heidelberg

Vertretungsprofessor (interim professor)
Institute of Mathematics
✉ *fschaffhauser@mathi.uni-heidelberg.de*
https://matematiflo.github.io
DOB: 31 July 1979. Citizenship: French.

Scientific Career

Since 2022 **Vertretungsprofessor**, Universität Heidelberg.
2012 – 2022 Associate Professor, Universidad de Los Andes.
2010 – 2012 Assistant Professor, Universidad de Los Andes.
2009 – 2010 Guest Scientist, IHES Paris & MPIM Bonn.
2005 – 2009 Postdoctoral Fellow, Keio University (Yokohama).

Education

2019 **Habilitation Thesis**, *University of Strasbourg*.
Topology of representation varieties of Fuchsian groups.

2002 – 2005 **PhD. Thesis**, *University Paris 6*.
Decomposable representations and Lagrangian submanifolds of unitary character varieties.

2001 – 2002 Master Degree, University Paris 7.

2001 *Agrégation de Mathématiques*, admitted.
(Nation-wide hiring competitive examination to teach in France).

1996 – 2001 **Double degree in Mathematics & Economics**, *University Paris 6 & HEC Paris*.

Grants, Fellowships & Awards

January 2020 JSPS Bridge Fellowship.
2018 – 2020 Marie Sklodowska-Curie Fellowship, 186 k€.
2018 – 2020 USIAS Fellowship (University of Strasbourg Institute of Advanced Study), 34 k€.
2017 3-month CNRS Visiting position (*Poste rouge*).
2007 – 2009 Lavoisier Fellowship.
2005 – 2007 JSPS Postdoctoral Fellowship.

Institutional and academic responsibilities

Since 2017 *Commission for Gender and Diversity*, Colombian Society of Mathematics.
2016 – 2028 *Chair of the Graduate Committe*, Department of Mathematics, Los Andes.

Participation in steering or scientific committees

2016 Member of the Scientific Committee, *V Latin American Congress of Mathematics*.
2016 Member of the jury of the *Yu Takeuchi Prize* of the Colombian Academy of Sciences.
2013 Member of the Scientific Committee, *XIX Colombian Congress of Mathematics*.

Scientific publications

Refereed full papers

[17] With Erwan Brugallé. *Maximality of moduli spaces of vector bundles on curves*. Épijournal de Géométrie Algébrique (EPIGA), Volume 6 (2023).

[16] With Daniele Alessandrini and Gye-Seon Lee. *Hitchin components for orbifolds.* J. Eur. Math. Soc. Published online first: 14-02-2022.

[15] With Victoria Hoskins. *Rational points of quiver moduli spaces.* Ann. Inst. Fourier Volume 70 (2020) no. 3, pp. 1259–1305.

[14] With Indranil Biswas. *Parabolic vector bundles on Klein surfaces.* Illinois J. Math. 64 (2020), no. 1, pp.105–118.

[13] With Victoria Hoskins. *Group actions on quiver varieties and applications.* Internat. J. Math. 30 (2019), no. 2, p. 1950007, 46.

[12] *Finite group actions on moduli spaces of vector bundles.* Sémin. Théor. Spectr. Géom. (Grenoble) 34 (2016-2017), 33–63.

[11] *On the Narasimhan-Seshadri correspondence for Real and Quaternionic vector bundles.* J. Differential Geom. (2017) 105 (1), 119–162.

[10] With Indranil Biswas. *Vector bundles over a real elliptic curve.* Pacific J. Math. (2016) 283 (1), 43–62.

[9] With Chiu-Chu Melissa Liu. *The Yang-Mills equations over Klein surfaces.* J. Topol. (2013) 6 (3), 569–643.

[8] *Real points of coarse moduli schemes of vector bundles on a real algebraic curve.* J. Symplectic Geom. 10 (2012), no. 4, 503–534.

[7] *Moduli spaces of vector bundles over a Klein surface.* Geom. Dedicata 151 (2011), no. 1, 187–206.

[6] *Decomposable representations and Lagrangian submanifolds of moduli spaces associated to surface groups.* Math. Ann. 342 (2008), no. 2, 405–447.

[5] *Anti-symplectic involutions on quasi-Hamiltonian quotients.* Trav. Math. 17 (2007) 57–64.

[4] *A note on quasi-Hamiltonian geometry and representation spaces of surface groups.* In The COE Seminar on Mathematical Sciences 2005 (2007), vol. 36 of Sem. Math. Sci., 35–48.

[3] *Un théorème de convexité réel pour les applications moment à valeurs dans un groupe de Lie.* C. R. Math. Acad. Sci. Paris 345 (2007), no. 1, 25–30.

[2] *Representations of the fundamental group of an L-punctured sphere generated by products of Lagrangian involutions.* Canad. J. Math. 59 (2007), no. 4, 845–879.

[1] With Elisha Falbel and Jean-Pierre Marco. *Classifying triples of Lagrangians in a Hermitian vector space.* Topology Appl. 144 (2004), no. 1-3, 1–27.

Refereed conference publications

[4] *Symmetric differentials and the dimension of Hitchin components for orbi-curves.* In Proceedings of the ISAAC 2019 Congress (Aveiro). To appear.

[3] *Lectures on Klein surfaces and their fundamental group.* In Geometry and Quantization of Moduli Spaces. Advanced Courses in Mathematics - CRM Barcelona, Springer (2016), 67–108.

[2] *Differential geometry of holomorphic vector bundles on a curve.* Geometric and Topological Methods for Quantum Field Theory, Proceedings of the 2009 Villa de Leyva Summer School, Cambridge University Press (2013), 39–80.

[1] *Quasi-Hamiltonian quotients as disjoint unions of symplectic manifolds.* In Non-Commutative Geometry and Physics 2005-Proceedings of the International Sendai-Beijing Joint Workshop (2007), 31–54. World Scientific Press.

Textbook

[1] Analyse L3 (with J.P. Marco et al.). Pearson Education (2009).

Talks and lectures

Invited lectures

2022 *Twisted local systems and Higgs bundles for nonconstant groups*, Casa Matemática Oaxaca.

2021 *Nonabelian Hodge theory*, Waseda University Global Lectures Program, Tokyo.

2017 *The Kempf-Ness theorem and the Narasimhan-Seshadri theorem*. Mini-course for graduate students, Strasbourg.

2014 *Fundamental groups of real algebraic curves*, CIMPA Research School on Real Algebraic Geometry, Villa de Leyva.

2012 *Klein surfaces and their fundamental group*, Workshop on Representations of Surface Groups, CRM Barcelona.

2009 *Differential Geometry of Holomorphic Vector Bundles on a Curve*, Summer School on Topological and Geometric Methods in Quantum Field Theory, Villa de Leyva.

2007 *Introduction to quasi-Hamiltonian Geometry*, Asahikawa Winter School, Hokkaido (2007).

Invited conferences

2022 Complex hyperbolic geometry and related topics, CIRM Luminy. *Twisted character varieties.*

2022 Enumerative, real and birational geometry, Le Croisic. *Maximality of moduli spaces of vector bundles on curves.*

2021 Mathematical Congress of the Americas, Buenos Aires. *Moduli varieties of twisted local systems.*

2020 Teichmüller Theory: Classical, Higher, Super and Quantum. CIRM Luminy. *Twisted character varieties, split real forms and higher Teichmüller components.*

2019 ISAAC Congress, Special Session on Complex Geometry, Aveiro. *Hitchin components for orbifold fundamental groups.*

2019 Journées Réelles de l'Ouest, Nantes. *Cohomology of moduli stacks of real vector bundles.*

2018 Complex Analytic Geometry, Mumbai. *Hitchin components for orbifold fundamental groups.*

2017 Mathematical Congress of the Americas, Montréal. *Hitchin components for orbifold fundamental groups.*

2016 New perspectives on Higgs bundles, branes and quantization, Simons Center at Stony Brook. *Finite group actions on moduli spaces of vector bundles.*

2015 50 years of the Narasimhan-Seshadri theorem, Chennai. *On the Narasimhan-Seshadri correspondence for Real and Quaternionic vector bundles.*

2015 XX Congreso Colombiano de Matemáticas, Manizales. *Mod 2 cohomology rings of moduli stacks of Real vector bundles.*

2014 Real Vector Bundles, Brest. *Modular compactifications of moduli spaces of Real and Quaternionic vector bundles.*

2014 Geometry and Physics of Moduli Spaces, Madrid. *The Yang-Mills flow of a real or quaternionic Hermitian vector bundle.*

2014 II GEAR Junior Retreat, Ann Arbor. *Representation varieties in real algebraic geometry.*

2013 Mathematical Congress of the Americas, Guanajuato. *On the Narasimhan-Seshadri correspondence for Real and Quaternionic vector bundles.*

2013 Analytic and Algebraic Geometry related to Bundles, Mumbai. *The Yang-Mills equations over Klein surfaces.*

2010 Journées Nancéennes de Géométrie, Université Henri Poincaré. *Modules de fibrés vectoriels sur une surface de Klein.*

2009 Colloque Paulette Libermann - Héritage et descendance, Institut Henri Poincaré. *Modules de fibrés vectoriels sur une surface de Klein.*

2009 XVII Congreso Colombiano de Matemáticas, Cali. *Stable vector bundles and anti-holomorphic involutions of compact Riemann surfaces.*

2007 The Japanese Mathematical Society 54th Geometry Symposium, Kagoshima. *A real convexity theorem for quasi-Hamiltonian actions.*

Contributed conferences

2018 International Congress of Mathematicians, Rio de Janeiro. *Representation varieties of orbifold fundamental groups.*

2018 Complex Geometry and Gauge Theory (VBAC), Luminy. *Hitchin components for orbifold fundamental groups.*

2014 International Congress of Mathematicians, Seoul. *The Yang-Mills equations over Klein surfaces.*

2012 IV Congreso Latino Americano de Matemáticas, Córdoba. *Topology of moduli spaces of vector bundles on a real algebraic curve.*

2011 Moduli spaces (VBAC), Isaac Newton Institute. *The Yang-Mills equations over Klein surfaces.*

2010 V Congreso Ibero-Americano de Geometría, Pucón. *Moduli spaces of vector bundles over a Klein surface.*

Organization of scientific meetings

December 2021 With the *Commission for Gender and Diversity* of the Colombian Society of Mathematics: *3rd Meeting of Women Mathematicians in Latin America*, Bogotá.

June 2021 With Thibaut Delcroix and Georgios Kydonakis. *Geometric and analytic aspects of moduli spaces of Higgs bundles*, Strasbourg.

May 2018 With Lucía López de Medrano. *Real and Tropical Geometry*, First joint meeting of the Colombian and Mexican Mathematical Societies, Barranquilla.

December 2017 With Vincent Pilloni. *Rencontres franco-colombiennes de mathématiques*, ENS Lyon.

July 2017 With Laura Schaposnik and Richard Wentworth. *Geometry and Physics of Higgs Bundles*, Mathematical Congress of the Americas, Montréal.

June 2016 With Laura Schaposnik. *Higgs Bundles and Real Character Varieties*, 5th Latin American Congress of Mathematicians, Barranquilla.

June 2013 With Sofía Pinzón and Margarita Toro. *Special Session on Geometry and Topology*, XIX Congreso Colombiano de Matemáticas, Barranquilla.

October 2011 With Johannes Huisman. *Vector bundles and Real Algebraic Curves*, Bogotá.

Organization of research schools and courses

March 2018 CIMPA/ICETEX mini-course by Arnaud Beauville (Nice), *Complex tori and Abelian Varieties*, Bogotá.

June 2017 With Vincent Pilloni. *Summer school on Arithmetic and Dynamics*, Bogotá.

July 2014 With Erwan Brugallé. *CIMPA Research School and Conference on Real Algebraic Geometry*, Villa de Leyva (2014).

Dissemination and scientific communication

October 2020 Talk for a general audience at: *A slice of pizza flat as a cylinder*, *Science Fest* (Strasbourg).

October 2018 Discovery activity for high school students: *Heredity and Probability in Mendel's work*, *Science Fest* (Strasbourg).

Teaching experience

Graduate courses

Since 2011 Riemann surfaces, Algebraic Topology I and II, Geometric Invariant Theory, Vector Bundles on Algebraic Curves.

Courses for Mathematics students

Since 2010 Measure theory, Symplectic Geometry, Complex analysis, Differential geometry, Real Algebraic Varieties.

Courses for Engineering students and other majors

Since 2010 Vector calculus, Differential Equations, Linear Algebra, Optimization.

Participation in a PhD. Thesis Committee

2021 [referee] Yohann Bouilly, *Ergodic actions of Torelli groups and pure modular groups on character varieties and topological dynamics of modular groups*, Université de Strasbourg.

2021 Mathieu Ballandras, *Weyl group actions on the cohomology of character and quiver varieties*, Université de Paris / SISSA.

2019 [referee] Arley Torres, $\mathbb{Z}_k$*-stratifolds*, Universidad de Los Andes.

Supervision and mentoring

2 postdoctoral researchers

2022 Leonardo Roa-Leguizamón, Zeinab Toghani.

6 Master students

2021 Juan-Sebastián Numpaque-Roa.

2019 Juan-Martín Pérez-Bernal.

2018 Nicolás Walteros-Vergara.

2013 Camilo Vargas-Contreras.

2012 Andrés Jaramillo-Puentes, Ramón Urquijo-Novella.

7 Undergraduate students

2019 Nicolás Betancourt-Cardona.

2017 Alirio Calderón-Díaz, David Jaramillo-Duque.

2016 Santiago Cortés-Gómez, Simón Soto-Ochoa.

2013 Alejandro Rivera.

2011 Sergio Pedraza-Rodríguez.

Language skills

French Mother tongue.

English Fluent.

Spanish Fluent.

Japanese JLPT N3 (December 2015, score : 62%).

German CEFR A2-B1.

Computer skills

Programming Sagemath, R, Python, Lean.

Markup	LaTeX, HTML, MathML, Markdown.
Software	Microsoft Word, Excel and Powerpoint, Libre Office.

Referee service

Communications in Analysis and Geometry, Communications in Mathematical Physics, Compositio Mathematica, Geometriae Dedicata, International Journal of Geometric Methods in Modern Physics, International Journal of Mathematics, International Mathematics Research Notices, Journal of Mathematical Physics, Journal of Pure and Applied Algebra, Journal of the Mathematical Society of Japan, Journal of Topology, Mathematische Annalen, Pacific Journal of Mathematics, Quaterly Journal of Mathematics, Lecturas Matemáticas, Revista Colombiana de Matemáticas, Revista Matemática Complutense, SIGMA.