Adrien Brochier

18^{th} November 1983, Villeurbanne
E-mail: adrien.brochier@gmail.com
Home page: http://abrochier.org/

Curriculum Vitae

Employment

Now	Research associate at Hamburg University
2015 → 2016	Postdoctoral fellow at the MPIM Bonn
2013 → 2015	Whittaker Fellow, University of Edinburgh
2012 → 2013	Research assistant, University of Edinburgh
2011 → 2012	Postdoctoral assistant, University of Geneva
2010 → 2011	ATER (teaching assistant), Université de Strasbourg.
2007 → 2010	Allocataire de recherche (full PhD scholarship) and moniteur (teaching assistant), Université de Strasbourg.

Education

2007 → 2011	PhD at IRMA in Strasbourg under the supervision of **Benjamin Enriquez**. Subject: *A Kohno–Drinfeld theorem for the monodromy of cyclotomic KZ connections.*.
2006 → 2007	Master 2 of Mathematics, Université de Caen Basse-Normandie. Master thesis under the supervision of **Bernard Leclerc**: *Littlewood-Richardson rule and representations of* $GL_n(\mathbb{C})$.
2005 → 2006	Master 1 of Mathematics, Heidelberg Universität (Erasmus).
2002 → 2005	Licence of Mathematics, Université Lyon 1.

Research

Topics

Topological quantum field theories, representation theory, braid and knot theory, operads, Drinfeld associators, KZ equations, quantum groups, Kazhdan–Lusztig cells

Publications

- A. Brochier, *A Duflo star-product for Poisson groups*, (SIGMA 12 (2016), 088)
- A. Brochier, *Virtual tangles and fiber functors*, (To appear in JKTR)
- D. Ben–Zvi, A. Brochier, D. Jordan, *Integrating quantum groups over surfaces* (To appear in J. Topol.)
- A. Brochier, D. Jordan, *Fourier transform for quantum D-modules via the punctured torus mapping class group* (Quantum Topology (2017) 8(2):361–379)
- A. Brochier, *Cyclotomic associators and finite type invariants for tangles in the solid torus* (Algebraic & Geometric Topology 13 (2013) 3365-3409)
- A. Brochier, *A Kohno–Drinfeld theorem for the monodromy of cyclotomic KZ connections* (Comm. Math. Phys. 2012, 311, 55-96)

Preprints

- A. Brochier, D. Jordan, N. Snyder, *On dualizability of braided tensor categories* (Available on my webpage)
- D. Ben–Zvi, A. Brochier, D. Jordan, *Quantum character varieties and braided module categories* (ArXiv:1606.04769)

Articles in preparation

- A. Brochier, P. Safronov, *On Tamarkin and Etingof-Kazhdan quantization of Poisson-Lie groups*
- A. Brochier, *On quantization of quasi-Hamiltonian spaces*

Lectures and Master classes

- *Quantum character varieties* (3 hours, Categorifications, derived geometry and quantum cohomology, Paris, November 2016)
- *Quantum character varieties* (6 hours, Hamburg, October 2016)
- *Quantum character varieties* (6 hours, Strasbourg, November 2016)
- *Quantum character varieties* (4 hours, Geneva, November 2016)

Talks in international conferences

- *Quantum D-modules and topological field theories* (Particle collision, geometry and representation theory, Edinburgh 03/15)
- *Quantum D-modules and topological field theories* (Geometry and representation theory of Cherednik algebras and categories $\mathcal{O}$, Paris 01/15)
- *Quantum D-modules and topological field theories* (Higher structures 2014, Geneva, 10/14)
- *Quantum D-modules and topological field theories* (ARTIN meeting, Edinburgh, 06/14)
- *On finite type invariants in the solid torus* (ARTIN conference, Edinburg , 11/12)
- *A Kohno–Drinfeld theorem for the monodromy of cyclotomic KZ connections* (Colloque tournant du GDR TLAG, Caen, 01/12)
- *Introduction to Drinfeld associator theory* (Workshop on Kontsevich formality theory and the Duflo isomorphism, Varsovie, 04/09)

Talks in research seminars and workshops

- *Quantum character varieties* (Louvain-la-neuve, 11/17)
- *The Hitchin Integrable System* (ZMP Seminar, Hamburg, 05/17)
- *A Duflo star-product for Poisson groups* (Geneva, 11/16)
- *Quantum D-modules and topological field theories* (Newcastle, 03/15)))
- *Théories topologiques des champs et D-modules quantiques* (Paris 7, 06/14)
- *Théories topologiques des champs et D-modules quantiques* (Lyon, 03/14)
- *On finite type invariants in the solid torus* (University of Pennsylvania, 03/13)
- *On finite type invariants in the solid torus* (MIT, 03/13)
- *On finite type invariants in the solid torus* (Austin, 02/13)
- *A Kohno–Drinfeld theorem for the monodromy of cyclotomic KZ connections* (Boston University, 02/13)
- *A Kohno–Drinfeld theorem for the monodromy of cyclotomic KZ connections* (Newcastle, 01/13)
- *On finite type invariants in the solid torus* (Glasgow, 01/13)
- *On finite type invariants in the solid torus* (Lyon , 11/12)
- *On finite type invariants in the solid torus* (Algebra seminar, Aberdeen, 10/12)
- *Qantum groups, KZ equation and the Kohno–Drinfeld theorem* (Mini course, Edinburgh, 10/12)
- *Un théorème de Kohno–Drinfeld cyclotomique* (Séminaire géométrie non-commutative, Toulouse, 04/12)
- *Cyclotomic associators and finite type invariants* (Séminaire Groupes de Lie et espaces des modules, Genève, 04/12)
- *Associateurs de Drinfeld, formalité des groupes de tresse et conjecture de Kashiwara–Vergne* (Groupe de travail VasKho, Caen, 03/12)
- *A Kohno–Drinfeld theorem for the monodromy of cyclotomic KZ connections* (Séminaire Groupes de Lie et espaces des modules, Genève, 09/11)
- *A Kohno–Drinfeld theorem for the monodromy of cyclotomic KZ connections* (Mathematical physics seminar, ETH Zurich, 05/11)
- *Un morceau d'esquisse: Groupe de Galois absolu et groupes fondamentaux* (Séminaire des doctorants, Strasbourg, 01/11)
- *A Kohno-Drinfeld theorem for some generalized braid groups* (General mathematics seminar, Luxembourg, 03/10)
- *La voie octuple : représentations de $SU(3)$ et découverte des quarks* (Séminaire doctorant, Strasbourg, 01/10)
- *Catégories abéliennes I et II* (Groupe de travail Algèbre homologique, Strasbourg, 11/09)
- *Groupe de Grothendieck-Teichmuller, existence d'associateurs rationnels* (Groupe de travail Topologie quantique, Strasbourg, 11/09)
- *Groupes de réflexion complexe et théorème de Kohno–Drinfeld pour les groupes de tresses de type B* (Séminaire d'algèbre, Lyon, 09/09)
- *Représentations induites: point de vue algébrique* (Séminaire doctorant, Strasbourg, 05/09)
- *Groupes de réflexion complexe et théorème de Kohno–Drinfeld pour les groupes de tresses de type B* (Séminaire quantique, Strasbourg, 03/09)
- *Équations KZ et associateurs de Drinfeld* (Séminaire doctorant, Strasbourg, 02/09)
- *Set Inversion via Interval Analysis applied to dielectric spectroscopy* (SWIM, Montpellier, 06/08)
- *Tableaux de Young et règle de Littlewood-Richardson* (Séminaire doctorant, Strasbourg, 03/08)
- *Combinatoire des tresses* (Séminaire doctorant, Strasbourg, 10/07)

Applied science

Collaboration with Maëlenn Aufray and the "Adhäsion und Interphasen in Polymeren" team of the Saarbrucken university. I wrote a new algorithm based on interval analysis in order to fit data coming from the studies of materials through dielectric spectroscopy, using a highly nonlinear model. This work leads to a publication: Adrien Brochier, Maëlenn Aufray, Wulff Possart, *Dielectric spectra analysis: reliable parameter estimation using interval analysis* in Materials with Complex Behaviour, (Springer) édited by A. Oechsner, L. da Silva and H. Altenbach.

Teaching and administrative tasks

Lectures

2007/2008	Mathematics and Statistics (Licence 1 Biology)
2008/2009	Linear algebra (Licence 1 Mathematics, physics, chemistry)
	Geometry (Licence 2 Mathematics)
2009/2010	Algebra (Licence 1 Mathematics)
2010/2011	Algebra (Licence 1 Mathematics and economy)
2012/2013	SMSTC Algebra (Master 2 and PhD Mathematics)
2014	Mathematics for Science and Engineering 1a

Tutorials

	Computer algebra (Licence 1 Mathematics)
2011/2012	Hopf algebras (Master 1 Mathematics)
	Statistics (Licence 1 Biology)
2013/2014	Facets of mathematics (Licence 2 mathematics)
	Caclulus and applications (Licence 1 mathematics)
	Algebra skills (Licence 1 mathematics)
	Introduction to number theory (Licence 3 mathematics)
	Honours algebra (Licence 1 mathematics)

Administrative tasks

	Referee for Communications in Mathematical Physics, Selecta mathematica, SIGMA and Proceedings of the London Mathematical Society
2009/10	Elected representative at the scientific council of IRMA
March 2014	Organization of the Workshop *Classical and quantum integrability*, Glasgow.
March 2015	Organization of the Workshop *Particle collision, geometry and representation theory*, Edinburgh.
2017	Organization of the seminar *Hitchin Systems, Nonabelian Hodge and Wall Crossing*, Hamburg

Popularizing actions

Since 2006	Member of the moderation team of the internet forum "les-mathematiques.net" (around 4000 subscribers)
2009	First prize at the "Poster competition" of the graduate school
	Poster for the "Science fest": *Darwin et les maths, les algorithmes génétiques*

Other

Languages	French, english and german
Computer programming	C/C++, Python, GMP, OpenGL, HTML/CSS, PHP/SQL.