

Louis-Hadrien Robert

Curriculum Vitae

Academic Career

- 2017–now **SwissMAP Postdoc**, *University of Geneva*, with R. Kashaev.
2014–2017 **Postdoc and Juniorprofessor (replacement)**, *Hamburg University*, with C. Schweigert.
2014 **Guest researcher**, *Max Planck Institute*, Bonn.
2013–2014 **Postdoc**, *Strasbourg University*, with F. Costantino.
2009–2013 **PhD Student**, *University Paris 7 – Denis Diderot*, supervised by C. Blanchet.

Education

- 2008–2009 **Research Internships**, Århus with J. Andersen and Zurich with A. Beliakova.
2007–2008 **Master 2**, *Pure Mathematics*, *University Paris 7 – Denis Diderot*, supervised by C. Blanchet.
2006–2007 **Agrégation of mathematics**, *13th*, (The highest French national competitive exam for teaching).
2005–2006 **Bachelor and Master 1**, *Mathematics and Computer Sciences*, *École Normale Supérieure*.
2005–2009 **Mathematical studies**, *École Normale Supérieure*.
2002–2005 **Preparatory classes**, *Lycée Henri IV*, Paris.
2002 **Baccalauréat**, *Specialized in Sciences*, *Lycée Buffon*, Paris.

Teaching Experience

- 2014–2019 **As a Postdoc.**
- Tutorials **Mathematics for computer scientists** *in French*
 - Tutorials **Geometry II** *in French*
 - Tutorials **Introduction to logic and set theory** *in French*
 - Tutorials **Algebra and Geometry III** *in French*
 - Tutorials **Analysis II** *in French*
 - Tutorials **General Mathematics** *in French*
 - Seminar **Representation of Finite Groups** *in German*
 - Tutorials **Topology** *in German*
 - Seminar **Quantum invariants** *in English*
 - Tutorials **Hopf Algebra** *in English*
 - Tutorials **Mathematics for Physicists** *in German*
 - Tutorials **Analysis I** *in German*
 - Mini-lecture **Introduction to Categories** for PhD students in physics *in English*
- 2014 **Examiner**, *Mathematics*, Competitive exam for Polytechnique and ÉNS, section PSI.
- 2013 **Oral examiner**, *Preparation of the Agrégation*, ENS Cachan.
- 2009–2013 **As a PhD student.**
- Integrated Lecture **Algebra and Analysis 2** *in French*
 - Tutorials **Algebra and Analysis 1** *in French*
 - Supervision of Professional Projects *in French*
- 2005–2008 **In Preparatory Classes.**
- **Oral Examiner**, 1st year, *Lycée Henri IV*. *in French*
 - **Maple tutorial** 1st year, *Lycée Henri IV*, 2nd year *Lycée Lavoisier*. *in French*

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Scientific Production

Preprints

- [15] **Link homology and Frobenius Extension II**, with *M. Khovanov*, arxiv:2005.08048, submitted.
- [14] **State sums for some super quantum link invariants**, with *E. Wagner*, arxiv:1909.02305, submitted.
- [13] **A quantum categorification of the Alexander polynomial**, with *E. Wagner*, arxiv:1902.05648, submitted.
- [12] **A new way to evaluate MOY graphs**, arxiv:1512.02370.
- [11] **On edge-colorings of planar bicubic graphs**, arxiv:1312.0361.

Publications

- [10] **Foam evaluation and Kronheimer–Mrowka theories**, with *M. Khovanov*, arxiv:1808.09662, accepted in *Advances in Mathematics*.
- [9] **Characterizations of box-totally dual integral polyhedra**, with *P. Chervet and R. Grappe*, arxiv:1804.08977, accepted in *Mathematical Programming Series A*.
- [8] **Symmetric Khovanov–Rozansky link homologies**, with *E. Wagner*, arxiv:1801.02244, published in *Journal de l'École Polytechnique* 7 (2020).
- [7] **A closed formula for the evaluation of \mathfrak{sl}_N -foams**, with *E. Wagner*, arxiv:1702.04140, accepted in *Quantum Topology*.
- [6] **Signature invariants for knotted webs**, with *C. Gille*, arxiv:1803.08025, published in *Algebraic and Geometric Topology* 18:6 (2018).
- [5] **Categorification of the colored \mathfrak{sl}_3 -invariant**, arxiv:1503.08451, published in *Journal of Knot Theory and its Ramifications* 25, 7 (2016).
- [4] **A characterization of indecomposable web-modules over Khovanov–Kuperberg algebras**, arxiv:1309.2793, published in *Algebraic and Geometric Topology* 15 (2015).
- [3] **Grothendieck groups of the Khovanov–Kuperberg algebras**, arxiv:1312.1122, published in *Journal of Knot Theory and its Ramifications* 24, 14 (2015).
- [2] **A large family of indecomposable projective modules for the Khovanov–Kuperberg algebras of \mathfrak{sl}_3 -webs**, arxiv:1207.6287, published in *Journal of Knot Theory and its Ramifications* 22, 11 (2013).
- [1] **Algebras for \mathfrak{sl}_3 -homology**, Proceedings of 12th forum des jeunes mathématicien-ne-s, 2012.

University Theses

- 2013 **PhD Thesis**, *Sur l'homologie \mathfrak{sl}_3 des enchevêtrements; algèbres de Khovanov–Kuperberg*, supervised by C. Blanchet.
- 2008 **Magister Thesis**, *Fonction potentielle de Conway et homologie de Heegaard–Floer*, supervised by C. Blanchet.
- 2008 **Master Thesis**, *Une construction géométrique de la fonction potentielle de Conway*, supervised by C. Blanchet.
- 2006 **M1 Thesis**, *Groupes de tresses et algorithme de réduction des poignées*, with N. Curien supervised by P. Dehornoy.

Selected Talks

- 2018 **Foam evaluation and Kronheimer–Mrowka theory**, *Interactions of low-dimensional topology and "higher" representation theory*, Zurich.
- 2018 **Foams and Categorification**, *Workshop Categorification in mathematical physics*, Stony Brook.

- 2017 **Categorification of MOY calculi II**, *Workshop categorification, representation theory and symplectic geometry*, HIM, Bonn.
- 2017 **An evaluation of \mathfrak{sl}_N -foams**, *Winter Braids 7*, Caen.
- 2015 **The colored \mathfrak{sl}_3 -homology**, *AMS-EMS-SPM Joint Meeting*, Porto.
- 2014 **Grothendieck groups of the Khovanov–Kuperberg algebras**, *Winter Braids 4*, Dijon.
- 2013 **Categorification of the colored \mathfrak{sl}_3 invariant**, *Conference Quantum Topology*, Cheliabinsk.
Seminar in Århus, Cambridge, Dijon, Geneva, Grenoble, Hamburg, Lille, Lisbon, Montpellier, New York, Orsay, Paris, Strasbourg, Stuttgart, Toulouse ...
 Complete List: www.unige.ch/math/folks/robert/talks.html

Languages

- French **Mother Tongue.**
 English **Fluent.**
 German **Fluent.**

Community Contributions

- 2020 **Organizer**, [K-OS], Knot Online Seminar.
- 2019 **Organizer**, *Low dimensional topology: a Colloquium in honour of Christian Blanchet*, University Paris 7 – Denis Diderot.
- 2017–now **Organizer**, *Geometry and Topology Seminar*, University of Geneva.
- 2011–2013 **Spokesperson of PhD students**, *Scientific council of the Department of Mathematics*, University Paris 7 – Denis Diderot.
- 2010–2013 **Membre of the "Bureau des Doctorants"**, University Paris 7 – Denis Diderot.
- 2011–2012 **Organizer**, *Casual seminar Bourbakettes*, University Paris 7 – Denis Diderot.
- 2009–2010 **Organizer**, *Workshop "Group Cohomology"*, University Paris 7 – Denis Diderot.

Miscellaneous

Programming, *C++*, *Caml*, *L^AT_EX*, *Maple*, *R*, *Python*.

Volunteering.

- Renovation of a school in Magba (Cameron) during summer 2003, with 2 years preparation (fund-raising, logistic).