

Sylvain Lavau

Université Paris Diderot IMJ-PRG
Bâtiment Sophie Germain – office 712
8 Place Aurélie Nemours
75013 Paris, France
☎ +33 (0)6.49.12.64.50
✉ sylvain.lavau@gmail.com
🌐 www.sylvainlavau.com

Research Interests Lie ∞ -algebroids, Singular foliations, Holonomy groupoid, Homotopy theory
BRST quantization, Batalin-Vilkovisky formalism, Higher gauge theories

Positions

- Jan 2019 – Present **Research Fellow, Université Paris VII Diderot**, Paris,
Scholarship SINGSTAR.
- July – Dec 2018 **Research Fellow, Max Planck Institute**, Bonn (Germany).
- July 2017 – **Research Fellow, Universidade do Porto**, Porto (Portugal),
June 2018
Scholarship UID/MAT/00144/2013.
- Sept 2016 – **Teaching and Research Fellow, Université de Lorraine**, Nancy (France),
June 2017
ATER position : teaching (192h) and research.

Education

- 2012 – 2016 **Ph.D in Mathematics, Université Claude Bernard**, Lyon (France),
PhD in mathematics (under the supervision of T. Strobl and H. Samtleben) on the applications of Lie ∞ -structures to higher gauge theories, and to foliations theory. Title : *Lie ∞ -algebroids and singular foliations*.
- 2010 – 2012 **M. Sc. in Theoretical Physics, Ecole Normale Supérieure**, Lyon, Paris,
Physics: M.Sc in theoretical physics, majoring in statistical and quantum field theories.
Mathematics: Auditor of masters in mathematics, majoring in differential geometry and mathematical physics.
- 2009 – 2010 **Graduate studies in Mathematics, UdeM & McGill Universities**, Montreal,
Graduate level classes in Mathematics, as an exchange student.

2006 – 2009 **B. Sc. in Physics**, *Lycée du Parc & Ecole Normale Supérieure*, Lyon,
Bachelor in Physics, majoring in Physics and Mathematics.

Languages French (native), English (C2), Japanese (JLPT 3), Spanish (B2), Arabic (A2)

Teaching

2016 – 2017 **Teaching Fellow**, *Université de Lorraine*, Nancy,
In charge of problem solving sessions in Calculus and Statistics to first year students.

2012 – 2016 **Teaching Assistant**, *Université Claude Bernard*, Lyon,
In charge of problem solving sessions in Algebra, Analysis and Geometry to first and second year students.

2011 – 2012 **Teaching Assistant**, *Lycée Janson de Sailly*, Paris,
In charge of symbolic computing sessions (on Maple) to second year students. I had to propose exercises to students that are based on a physical topic.

August 2010 **Teacher**, *Association Avan*, Zorgho (Burkina Faso),
Voluntary tutoring to middle school students for the summer session .

2008-2011 **Tutor**, *Associations Trait d'Union/Toujours Ensemble*, Lyon/Montréal,
Voluntary tutoring to underprivileged pupils from middle and high schools in areas targeted for special help in education.

Organizational experience

Fall 2018 **Seminar Organizer**, *Max Planck Institute*, Bonn,
Co-organizer of the weekly learning seminar on Deformation Theory at MPIM:
<https://www.mpim-bonn.mpg.de/node/8756>.

Oct 2017 – Present **Editor in Chief (Maths section)**, *Emergent Scientist*, EDP Sciences,
Supervisor of the creation and Editor of the Mathematics section in the new journal Emergent Scientist of EDP Sciences Editions, whose aim is to provide an academic journal at undergraduate level: <https://emergent-scientist.edp-open.org>.

2014 – 2015 **Seminar Organizer**, *Institut Camille Jordan*, Lyon,
Co-organizer of the weekly seminar of the mathematical physics team of the institute.

September 1-4 2013 **Staff member in ETC14**, *École Normale Supérieure*, Lyon,
Staff member of the organizing committee of the 14th European Turbulence Conference..

Scientific Popularization

Oct 2018 – Present **Event manager, *Pint of Science*,**

Event manager of the Pint of Science Festival in Paris (2019 and 2020), in charge of the evening sessions dedicated to theoretical physics, quantum physics and astrophysics.

December 2017 **Community Manager, *En direct du labo*,**

Community manager of the Twitter account @endirectdulabo that gives the opportunity to young researchers to talk about their work.

Jan 2017 – Present **Translator, *H&K Editions*,**

English to French translator of a manga whose topic is about astronomy and the universe.

Sept – Dec 2016 **Radio Broadcasting, *Radio Campus Lorraine*, Nancy,**

Radio presenter in the weekly scientific broadcast of the students' radio of the Université de Lorraine.

2012 – 2015 **Popularizing Assistant, *Association Mathalyon*, Lyon,**

Interventions to middle school students for day long activities promoting Mathematics and popularizing research and mathematical reasoning.

List of publications

- ◇ S. L. and J. Stasheff, *L_∞ -algebra extensions of Leibniz algebras*. arXiv:2003.07838
- ◇ S. L. and J. Palmkvist, *Infinity-enhancing of Leibniz algebras*. arXiv:1907.05752
- ◇ C. Laurent-Gengoux, T. Strobl and S. L., *The universal Lie ∞ -algebroid of a singular foliation*. arXiv:1806.00475
- ◇ S. L., *A short guide through integration theorems of generalized distributions*. Differ. Geom. Appl. **61**:42-58 (2018). arXiv:1710.01627
- ◇ S. L., *Tensor hierarchies and Leibniz algebras*. J. Geom. Phys. **144**:147-189 (2019). arXiv:1708.07068
- ◇ H. Samtleben, T. Strobl and S. L., *Hidden Q -structure and Lie 3-algebra for non-abelian superconformal models in six dimensions*. J. Geom. Phys. **86**:497-533 (2014). arXiv:1403.7114

Work in progress

- ◇ U. Bruzzo and S.L., *Lie algebroid as a derived functor, II*
- ◇ C. Laurent-Gengoux and S.L., *Deformations of singular foliations*
- ◇ S.L., *The modular class of a singular foliation*.

Contributions

Talks

Conferences and workshops

- *Singular Foliations*, May 13-14, 2019, Leuven (Belgium).
- *Colloque tournant*, January 31-February 1, 2019, Poitiers (France).
- *Rencontres Poisson*, June 13-14, 2018, La Rochelle (France).
- *Higher Structures 2*, March 5-8, 2018, Philadelphia.
- *Feuilletages singuliers*, November 23-24, 2017, Metz (France).
- *Géométrie non commutative et applications*, November 2-5, 2016, Metz.
- *Winter School in Mathematical Physics*, January 12-16, 2015, Les Diablerêts (Switzerland).

Seminars

- *Geometry Seminar*, Université Paul Sabatier, Fev. 2020, Toulouse (France).
- *Algebra, Geometry & Topology Seminar*, Université de Montpellier, Nov. 2018, Montpellier (France).
- *Operator Algebra Seminar*, Université Paris Diderot, Jan. 2019, Paris.
- *Oberseminar*, Max Planck Institute, Sept. 2018, Bonn.
- *Geometry Seminar*, ETH-Univ. Zurich, Sept. 2018, Zurich.
- *Geometry Seminar*, Universität Göttingen, August 2018, Göttingen (Germany).
- *Higher Geometry Seminar*, Max Planck Institute, July 2018, Bonn.
- *Geometry Seminar*, Universidade do Porto, June 2018, Porto.
- *Geometry & Mathematical Physics Seminar*, SISSA, Nov. 2017, Trieste (Italy).
- *Joint Geometry & Algebra Seminar*, Universidade do Porto, Oct. 2017, Porto.
- *Geometry Seminar*, Penn State, May 2017, State College (USA).
- *Deformation Theory Seminar*, UPenn, May 2017, Philadelphia.
- *Geometry Seminar*, KU Leuven, March 2017, Leuven.
- *Geometry Seminar*, National and Kapodistrian University of Athens, March 2017, Athens.
- *Graduate Colloquium*, ETH-Univ. Zurich, May 2015, Zurich.
- *Séminaire des Doctorants*, Université Claude Bernard, March 2015, Lyon.

Schools and Conferences

Mathematics and Physics

- *Supergeometry, Supersymmetry and Quantization*, December 16-19, 2019, Luxembourg.
- *Deformations and Rigidity in algebra, geometry and analysis*, October 7-11, 2019, Würzburg (Germany).
- *Souriau 2019*, May 27-31, 2019, Paris.
- *Groupoids and operator algebras, Applications to analysis, geometry and dynamics*, May 21-24, 2019, Orléans (France).
- *Higher Structures*, January 21-25, 2019, Marseille (France).
- *CIMPA School on Noncommutative Geometry and Index Theory*, December 3-15, 2018, Merida (Mexico).
- *INDAM workshop on Poisson Geometry and Higher Structures*, September 10-14, 2018, Roma.
- *Higher algebra and mathematical physics*, August 13-17, 2018, Bonn.
- *Rencontres Poisson*, June 14-15, 2018, La Rochelle.
- *GAP XVI*, May 29 - June 2, 2018, Timisoara (Romania).
- *Higher Structures 2*, March 5-8, 2018, Philadelphia.
- *Feuilletages singuliers*, November 23-24, 2017, Metz.
- *Winter School in Mathematical Physics*, January 8-13, 2017, Les Diablerêts.
- *Géométrie non commutative et applications*, November 2-5, 2016, Metz.
- *GAP XIV*, August 8-12, 2016, Sheffield (UK).
- *Poisson 2016*, June 27 - July 8, 2016, Geneva/Zurich.
- *From Poisson Geometry to Quantum Fields on Noncommutative Spaces*, October 5-10, 2015, Würzburg.

- *Winter School in Mathematical Physics*, January 12-16, 2015, Les Diablerêts.
- *Higher Structures in Geometry and Physics*, October 27-31, 2014, Geneva.
- *Poisson 2014*, July 28 - August 8, 2014, Urbana-Champaign (USA).
- *Journées de Physique Mathématique de Lyon: Topological Insulators*, September 11-13, 2013, Lyon.
- *GEOQUANT 2013*, August 19-23, 2013, Vienna.
- *18th Claude Itzykson Meeting: Frontiers in string theory*, July 1-3, 2013, Saclay (France).
- *Higher Algebra and Lie-infinity Theory*, June 25-28, 2013, Luxembourg.
- *Winter School in Mathematical Physics*, January 14-18, 2013, Les Diablerêts.
- *Summer school on Differential Geometry and Supersymmetry*, September 10-14, 2012, Hamburg.
- *Les Houches Winter School in Mathematical Physics*, January 29 - February 3, 2012, Les Houches (France).
- *Sixth Aegean Summer School - Quantum Gravity and Quantum Cosmology*, September 12-17, 2011, Naxos (Greece).
- *Strings, Cosmology and Gravity Student Conference 2010*, November 3-5, 2010, Paris.
- *Winter school in pure and applied mathematics*, January 8-11, 2010, Montreal.

Philosophy and History of Sciences

- *Universals' Locales*, January 8-9, 2020, Edinburgh.
- *Un siècle de Fisher : Atelier pluridisciplinaire pour une analyse critique d'un texte fondateur*, September 12-13, 2019, Paris.
- *Ecole Thématique Mathématiques et Philosophie Contemporaines*, June 27-29, 2019, Paris.
- *Masterclass in the Philosophy of Mathematical Practice*, June 19-21, 2019, Brussels.
- *Ecole Thématique Mathématiques et Philosophie Contemporaines*, June 27-30, 2018, Saint-Flour (France).
- *Historical epistemology and the disunities of the sciences*, May 24-26, 2018, Paris.
- *Congrès de la société d'histoire des sciences et des techniques*, April 19-21, 2017, Strasbourg (France).

Research Stays

- *SISSA*, Trieste (Italy) – two weeks (November 2017).
- *UPenn*, Philadelphia – one month (May 2017).
- *KU Leuven*, Leuven – two weeks (March 2017).
- *National and Kapodistrian University of Athens*, Athens – one month (February 2017).

Grants and Fellowships

- Fellowship from the project *SINGSTAR: Analysis on singular and non compact spaces. A C^* -algebra approach*, funded by the CNRS (nine months fellowship).
- Fellowship UID/MAT/00144/2013 of the Portuguese Research Foundation FCT, 2017 (one year fellowship).
- PhD Fellowship, 2012-2016 (4 years fellowship).
- Ecole Normale Supérieure Grant, 2008-2012 (4 years salary).