

Curriculum vitae

(February 2017)

Bruno VALLETTE

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Family Status

Born on January 6, 1976 (Gérardmer, France).

Current Position

Professor at the University Paris 13 since September 2015,
Junior member of the Institut Universitaire de France (2016-2021).

- ✉ PROFESSIONAL ADDRESS : Laboratoire Analyse, Géométrie et Applications (LAGA)
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Université Paris 13
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Education and Experience

- 2005–2015 : Maître de conférences at the University Nice Sophia Antipolis.
2009–2011 : Invited researcher at the Max Planck Institute (Bonn) .
June 2009 : Habilitation à diriger des recherches (University Nice Sophia Antipolis).
February 2005 : Maître de conférences (University Nice Sophia Antipolis)
December 2003 : Ph.D. Thesis in Mathematics (University of Strasbourg).
2000 – 2004 : Graduate studies in Mathematics (advisor : Jean-Louis Loday).
July 2000 : Agrégation of Mathematics.
1997 – 2000 : Undergraduate studies at the École Normale Supérieure of Lyon.

PhD Thesis and Habilitation à diriger des recherches

- ◇ *Properads in Algebra, Geometry, Topology, and Mathematical Physics*, Habilitation à diriger des recherches (June 2009), preprint J.A. Dieudonné department.
- ◇ *Koszul duality for props*, PhD Thesis (December 2003), Preprint IRMA Strasbourg.

Fields of interest

Algebra, Geometry, Topology, and Mathematical Physics.

Organisation and Administration

PHD ADVISOR : \diamond 3 PhD Theses defended :

Joan Millès 2010, Olivia Bellier 2012, Brice Le Grignou 2016.

\diamond 2 ongoing PhD Thesis :

Malte Dehling (Göttingen), Daniel Robert-Nicoud (DIM RDM-IdF Grant).

ADMINISTRATION :

- \diamond Elected member to the Scientific Committee of the CNRS Mathematics Institut (2014–2018).
- \diamond Elected member to the Administrative Committee of Nice Sophia Antipolis University and member of the Finance Committee (2012–2015).
- \diamond Elected member to the Permanent Committee for Human Resources of the J.A. Dieudonné department (2012–2015).
- \diamond Elected member to the Committee of the J.A. Dieudonné department (2009–2014).

EDITOR : \diamond Editor for the academic journal *Higher Structures*.

- \diamond Proceedings of the conference *Operads 2009*, 295 pages, 10 articles, coeditor with J.-L. Loday, *Séminaires et Congrès 26* (SMF) 2013.

HDR COMMITTEE : \diamond Member of the commun Habilitation committee for several universities in Paris (since 2015).

GRANT : \diamond PI of the ANR grant “Higher structures in Algebra and Topology” (2014–2018), total : 90 000 euros.

JURY : \diamond Member of the jury of the Agrégation of Mathematics (2013–now), responsible of an oral section in Algebra and Geometry.

PROGRAMME : \diamond *Grothendieck–Teichmüller groups, Deformation and Operads*, main organiser Newton Institute (University of Cambridge), 315000 euros (January–April 2013).

CONFERENCES : \diamond *Homotopical Algebra, Operads and Grothendieck–Teichmüller groups*, September 9–12, 2014 (Nice).
 \diamond *Higher Structures in Topology and Number Theory*, April 15–16, 2013 (Oxford).
 \diamond *Grothendieck–Teichmüller Theory and Multiple Zeta Values*, April 8–12, 2013,
 \diamond *Higher Structure 2013 : Operads and Deformation Theory*, April 2–5, 2013,
 \diamond *Introductory Workshop*, January 8–10, 2013, Newton Institute (University of Cambridge), GDO programme.
 \diamond *Operads and homotopy theory*, August 23–28, 2010 (University of Lille).
 \diamond *Operads 2009*, April 27–30, 2009, CIRM (Luminy).
 \diamond *K-Theory, Cyclic Homology and Operads*, January 5–7, 2006 (Strasbourg). Festschrift for the 60th birthday of Jean-Louis Loday.

WORKSHOP : \diamond *Differential graded En-Operads*, November 17–21, 2008 (Copenhagen).

THEMATIC SCHOOL : \diamond *Thematic School : Operads*, April 20–25, 2009, CIRM (Luminy).

SEMINARS : \diamond Organizer of the Algebraic Topology seminar (University Paris 13, 2016-2017).
 \diamond *Operads, deformation quantization and higher structures*, (MPIM, 2010).

WORKING GROUPS :

- \diamond *Catégories infinies* (2016–2017),
- \diamond *Factorisation Algebras* (2014–2015),
- \diamond *Higher Algebra* (2013–2014),
- \diamond *Drinfeld associators, Multiple Zeta Values and Grothendieck–Teichmüller groups* (2012),
- \diamond *En-Operads* (2008–2009),
- \diamond *Coxeter groups, hyperplane arrangements and Hopf algebras* (2007–2008),
- \diamond *Model categories, André–Quillen (co)homology, and Gamma-modules* (2006–2007),
- \diamond *Cohomology of finite and profinite groups* (2005–2006),
- \diamond *String Topology* (2004–2005),
- \diamond *Graph homology* (2003–2004),
- \diamond *Vertex and Chiral algebras* (2003).

Conferences

- ◇ Workshop on GT groups, Multiple Zeta Values and Associators (Les Diablerets, 2016).
- ◇ Conference for the Program on Higher Structures in Geometry and Physics (MPIM, 2016).
- ◇ Workshop on Homotopical Algebra and Geometry (Lancaster, 2015)
- ◇ Winter school in Mathematical Physics 2015 (Diablerets, 2015)
- ◇ Algebra, Deformation and Quantum Groups (CIRM Luminy, 2014).
- ◇ Homological Methods in Quantum Field Theory (Simons Center, 2014).
- ◇ Homotopical Algebra Summer Days (Barcelona, 2014).
- ◇ BV-algebras, Operads and Hopf algebroids (Oberwolfach, 2014).
- ◇ Algebraic Homotopy, Operads and GT-groups (Lille, 2014).
- ◇ Symposium in honour of Pierre-Louis Curien (Venice, 2013).
- ◇ Facets of Geometry (Stockholm, 2013).
- ◇ British Mathematical Colloquium 2013 (Sheffield, 2013).
- ◇ Virginia Conference on Algebraic Topology (Charlottesville, 2012).
- ◇ Higher structures in Mathematics and Physics V (Göttingen, 2011).
- ◇ Operads and Rewriting (Lyon, 2011).
- ◇ Barcelona Topology Workshop (Barcelona, 2010).
- ◇ Bonn-Luxembourg-Strasbourg Days : Operads (Luxembourg, 2010).
- ◇ Operads and Universal Algebra (Tianjin, 2010).
- ◇ Symplectic Geometry, Noncommutative Geometry and Physics (MSRI, 2010).
- ◇ Higher structures in Mathematics and Physics III (Zürich, 2009).
- ◇ Algebra Days (Clermont-Ferrand, 2009).
- ◇ Quantum group and Poisson Geometry Days (IHP Paris, 2009).
- ◇ Workshop Strings, Fields and Topology (Berkeley, 2009).
- ◇ Higher structures in Mathematics and Physics II (EPFL Lausanne, 2008).
- ◇ Annual meeting of the French network on Algebraic Topology (Paris 13, 2008).
- ◇ K-Theory and Homotopy Theory (Santiago de Compostela, 2008).
- ◇ Workshop on Algebraic and Geometric Deformation Spaces (MPI Bonn, 2008).
- ◇ Second Meeting Canada-France (Montréal, 2008).
- ◇ Conference on Algebraic Combinatorics and Trees (Lyon, 2008).
- ◇ Workshop on Operads and Props (Montpellier, 2008).
- ◇ Workshop on Higher Operads (CRM Barcelona, 2008).
- ◇ Moduli Spaces Conference (MPI Bonn 2008).
- ◇ Non-Commutative Geometry Conference (Chicago, 2007).
- ◇ Workshop on Hopf Algebras and Props (Boston, 2007).
- ◇ Operads 2006 (Strasbourg, 2006).
- ◇ Alpine Operad Workshop (Villard-sur-Olon, 2006).
- ◇ Coloquio de Álgebra (Buenos Aires, 2005).
- ◇ XVI Coloquio Latino-Americano de Álgebra (Colonia del Sacramento, 2005).
- ◇ Operads 2005 (CIRM Luminy, 2005).
- ◇ Meeting of the French network on Algebraic Topology (Louvain-La-Neuve, 2004).

Seminars

- 2016 Strasbourg, Paris 7, IHP.
- 2015 Paris 13.
- 2014 Stony Brook University, Amsterdam, Paris 7, Toulouse, Grenoble, CGP (POSTECH), Amiens.
- 2013 ETH Zürich, Paris 13, Luxembourg.
- 2012 Strasbourg, Lyon, Paris 7, Rome I.
- 2011 Paris 6, Bochum, Max Planck Institute, Paris 7, Copenhagen, ETH Zürich, Glasgow, Nice.
- 2010 Stony Brook University, Dublin, Bonn, Göttingen, Max Planck Institute (Bonn).
- 2009 Einstein Chair Seminar (CUNY New York), Max Planck Institute (Bonn), Lyon, Paris 6.
- 2008 CRM (Barcelona), Lyon, EPFL (Lausanne).
- 2007 Chicago, Northwestern, Einstein Chair Seminar (CUNY New York), Algebra Seminar IHP, Strasbourg, Lille.
- 2006 IHES, Max Planck Institute, Bochum.
- 2005 Stockholm, Texas A&M (College station), Rutgers University (New Brunswick), UPenn, Rutgers University, Strasbourg, Paris 13, Institut Henri Poincaré.
- 2004 Nice, Freiburg, Montpellier, Saint-Etienne, Strasbourg, Lyon, Paris 13, Clermont-Ferrand.
- 2003 Lille, Strasbourg.

Advanced lectures

- 2016 *Operads in Algebra, Topology and Geometry* (9 heures)
Spring School on Algebraic Topology, Shinshu University, Japon.
 - 2014 *Givental action and trivialization of the circle action* (8 hours)
(Center for Geometry and Physics, Pohang, South Korea, 2014).
 - 2013 *Algebraic Operads* (12 hours)
(GDO Programme, Newton Institute, Cambridge, UK, 2013).
 - 2011 *Homotopical algebra with Operads* (5 hours)
(Algebra, Topology and Fjords, Summer School, Nordfjordeid, Norway, 2011).
 - 2010 *Operads, Koszul duality theory and homotopical algebra* (6 hours)
(Operads-Deformations-Higher Structures Seminar, MPIM, 2010).
 - 2009 *Operads and Koszul duality theory* (6 hours)
(Thematic School : Operads, CIRM Luminy, April 2009).
 - 2008 *Deformation theory of algebraic structures* (8 hours)
(ETH Zürich, May 2008).
 - 2007 *Koszul duality of properads and applications to deformation theory* (6 heures)
(University de Barcelona, July 2007).
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Visits

- ◇ Max Planck Institute (Bonn), January–March 2016.
 - ◇ Hausdorff Research Institute for Mathematics (Bonn), May–June 2015.
 - ◇ Simons Center (Stony Brook University), October 2014.
 - ◇ Center for Geometry and Physics (South Korea), March 2014.
 - ◇ Newton Institute (University of Cambridge), January–April 2013, programme GDO.
 - ◇ Simons Center (Stony Brook University), June–July 2012.
 - ◇ Max Planck Institute (Bonn), August 2009–August 2011.
 - ◇ Simons Center (Stony Brook University), March 2010.
 - ◇ CUNY (New York), January 2009.
 - ◇ University of Valparaiso, December 2008.
 - ◇ Mathematical Institute of the University of Barcelona, July 2008.
 - ◇ ETH Zürich, May 2008.
 - ◇ University of Barcelona, July 2007.
 - ◇ University of Stockholm, June 2007.
 - ◇ Northwestern University (Evanston, Chicago), March–June 2007.
 - ◇ Stony Brook University (New York), March 2007.
 - ◇ Max Planck Institute (Bonn), May–June 2006.
 - ◇ IHES, March 2006.
 - ◇ University of Stockholm, June and October 2005.
 - ◇ Texas A&M, College Station, April 2005.
 - ◇ Rutgers University, Newark-New Brunswick, April 2005.
 - ◇ Mittag–Leffler Institute (Stockholm), April 2004.
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Grants and Networks

- ◇ ANR Young Researchers : *Higher structures in Algebra and Topology*, PI, 2014–2018.
 - ◇ ANR White Programme : *Homotopical Algebra, Operads and Grothendieck–Teichmüller groups*, member, 2011–2014.
 - ◇ ANR Young Researchers : *Operads, Bialgebras and Homotopical Theories*, local leader, 2007–2010.
 - ◇ ECOS-Sud : *Scientific Cooperation with Chili* with M. Ronco (Valparaiso) and J.-L. Loday (Strasbourg), 2006–2009.
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Languages

- ◇ FRENCH : native.
- ◇ ENGLISH : fluent.
- ◇ GERMAN : advanced notions.
- ◇ SPANISH : notions.

PUBLICATION LIST

BOOK

- 1) **Algebraic Operads**, with Jean-Louis Loday, Grundlehren der mathematischen Wissenschaften, Volume 346, Springer-Verlag (2012), [654 pages].

PAPERS

- 2) **Brown's moduli spaces of curves and the gravity operad**, to appear in Geometry & Topology [26 pages], [arXiv:1509.08840](https://arxiv.org/abs/1509.08840).
- 3) **Pre-Lie deformation theory**, with Vladimir Dotsenko and Sergey Shadrin, Moscow Mathematical Journal, Volume 16, Issue 3 (2016) 505–543 [39 pages].
- 4) **Givental Action and Trivialisation of Circle Action**, with Vladimir Dotsenko and Sergey Shadrin, Journal de l'École polytechnique – Mathématiques, 2 (2015), 213–246 [34 pages].
- 5) **De Rham cohomology and homotopy Frobenius manifolds**, avec Vladimir Dotsenko et Sergey Shadrin, Journal of the European Mathematical Society, Volume 17, Issue 2, (2015), 535–547 [13 pages].
- 6) **Higher Koszul duality for associative algebras**, with Vladimir Dotsenko, Glasgow Mathematical Journal, 55 (2013), 55–74 [20 pages].
- 7) **The minimal model for the Batalin–Vilkovisky operad**, with Gabriel Drummond-Cole, Selecta Mathematica, Volume 19, Issue 1, (2013), 1–47 [47 pages].
- 8) **Givental group action on Topological Field Theories and homotopy Batalin–Vilkovisky algebras**, with Vladimir Dotsenko and Sergey Shadrin, Advances in Mathematics, Volume 236, (2013), 224–256 [33 pages].
- 9) **Homotopy Batalin–Vilkovisky algebras**, with Imma Gálvez-Carrillo and Andy Tonks, Journal of Noncommutative Geometry, Volume 6, Issue 3, (2012), 539–602 [64 pages].
- 10) **Deformation theory of representations of prop(erad)s II**, with Sergei Merkulov, Journal für die reine und angewandte Mathematik (Crelles Journal), 636 (2009), 125–174 [50 pages].
- 11) **Deformation theory of representations of prop(erad)s I**, with Sergei Merkulov, Journal für die reine und angewandte Mathematik (Crelles Journal), 634 (2009), 51–106 [56 pages].
- 12) **Free monoids in monoidal abelian categories**, Applied Categorical Structures, Volume 17, Issue 1 (2009), 43–63 [21 pages].
- 13) **Manin products, Koszul duality, Loday algebras and Deligne conjecture**, Journal für die reine und angewandte Mathematik (Crelles Journal), 620, (2008), 105–164 [60 pages].
- 14) **A Koszul duality for props**, Transactions of the American Mathematical Society, 359, (2007), 4865–4943 [79 pages].
- 15) **Homology of generalized partition posets**, Journal of Pure and Applied Algebra, 208 (2007), no. 2, 699–725 [27 pages].
- 16) **Pointed and multi-pointed partitions of type A and B**, with Frédéric Chapoton, Journal of Algebraic Combinatorics, 23 (2006), no. 4, 295–316 [22 pages].
- 17) **Koszul duality for PROPs**, Comptes Rendus mathématiques de l'Académie des Sciences de Paris, 338 (2004), no. 12, 909–914 [6 pages].

SURVEY

- 18) **Algebra+Homotopy=Operad**, in Symplectic, Poisson and Noncommutative Geometry, MSRI Publications 62 (2014), 101–162 [62 pages].

PREPRINTS

- 19) **Homotopy theory of homotopy algebras**, submitted [28 pages], arXiv:1411.5533.
- 20) **Symmetric homotopy theory for operads**, with Malte Dehling, submitted [40 pages], arXiv:1503.02701.
- 21) **Noncommutative $\overline{\mathcal{M}}_{0,n+1}$** , with Vladimir Dotsenko and Sergey Shadrin, submitted [56 pages], arXiv:1510.03261.

EDITOR

- 21) **Opérades 2009**, conference proceedings, editor with Jean-Louis Loday, Séminaires et Congrès, no. 26 (SMF) 2013, [295 pages].

LECTURE NOTES

- 22) **Algèbre linéaire pour tous**, lecture notes on Linear Algebra for undergraduate studies [400 pages, 100 corrected exercises and 80 figures], to appear (Ellipses, 2017).

IN PREPARATION

- ◇ **Rewriting method in Koszul duality**, with Samuel Mimram and Sinan Yalin.
- ◇ **Higher Koszul duality for operads and E_∞ -operads**, with Malte Dehling.
- ◇ **The homotopy theory of graded mixed objects**, with Damien Calaque.
- ◇ **Non-commutative graph homology**, with Vladimir Dotsenko and Sergey Shadrin.