

David Li-Bland

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US Citizen, Canadian Citizen

Current Employment

2016– **Scientist**, Verseon.

Past Employment

2014–2016 **Visiting Assistant Professor**, U.C. Berkeley, Department of Mathematics.

2012–2016 **NSF Mathematical Sciences Postdoctoral Research Fellowship**, U.C. Berkeley, Department of Mathematics.

Experience

2016 **U.C. Berkeley CDIPS Data Science Workshop**, Project: *Pic2Poem*, github.com/davidlibland/Picture1000/.

2016 **U.C. Berkeley Faculty Short-Course on Data Science Pedagogy and Practice**.

Education

2007–2012 **Ph. D.**, University of Toronto, Advisor: Eckhard Meinrenken.
Mathematics

2006–2007 **M. Sc.**, University of Chicago.
Mathematics

2001–2005 **Hons. B. Sc.**, University of Toronto, *High Distinction*.
Mathematics

Research Interests

Machine Learning, Data Science, Information Geometry, Differential Geometry, Mathematical Physics, Category Theory, Topology

Research Honours and Awards

2014 **André Lichnerowicz prize in Poisson geometry**, (*International Conference on Poisson Geometry in Mathematics and Physics*).

2012–2016 **NSF Mathematical Sciences Postdoctoral Research Fellowship**, Award No.: DMS-1204779.

2012 **NSERC PDF**, *Declined*.

2012 **Malcolm Slingsby Robertson Prize**, University of Toronto, (Dissertation prize).

2008–2011 **NSERC CGS-D**, University of Toronto.

2008 **John Robert Gilkison Smyth Mathematics Scholarship**, University of Toronto.

- 2007 **Helen Sawyer Hogg Graduate Admission Award**, *University of Toronto*.
- 2006 **Robert R. McCormick Fellowship**, *University of Chicago*.
- 2005 **NSERC CGS-M**, *Declined*.
- 2005 **Chancellor's Silver Medal**, *University of Toronto, Trinity College*.
- 2005 **Provost's Scholar**, *University of Toronto*.
- 2005 **Coxeter Scholarship in Mathematics**, *University of Toronto*.
- 2005 **Ivan Szak Scholarship in Mathematics**, *University of Toronto*.
- 2004 **Dickinson-Cartwright Scholarship**, *University of Toronto*.
- 2004 **Margaret Ronald Taylor and Thomas Paxton Taylor Award**, *University of Toronto*.
- 2004 **Norman Stuart Robertson Scholarship in Mathematics**, *University of Toronto*.
- 2004 **University of Toronto Scholar**, *University of Toronto*.
- 2003 **NSERC USRA**, *University of Toronto*.
- 2003 **Mrs. Mitzi Newman**, *University of Toronto*.
- 2002 **NSERC USRA**, *University of Toronto*.
- 2002, 2003, 2004, 2005 **Dean's List Scholar**, *University of Toronto*.

Teaching Experience

Course Instructor

- Fall 2015 **MAT 55 (Discrete Mathematics)**, *U.C. Berkeley*.
- Spring 2015 **MAT 113 (Introduction to Abstract Algebra)**, *U.C. Berkeley*.
- Fall 2014 **MAT 189 (Mathematical Methods in Classical and Quantum Mechanics)**, *U.C. Berkeley*.
- 2009 **MAT188F (Applied Linear Algebra)**, *University of Toronto*.

Course Instructor in a Volunteer Capacity

- Fall 2016 **MT 630 (Differential Geometry)**, *University of Dar Es Salaam*.
- Spring 2014 **Introduction to Classical Mechanics**, *AIMS Ghana*.

Teaching Assistant

- 2012 **MAT1301S (Topology II)**, *University of Toronto*.
- 2010,2011 **MAT1300F (Topology I)**, *University of Toronto*.
- 2009 **MAT357S (Real Analysis I)**, *University of Toronto*.
- 2008 **MAT197S (Calculus B)**, *University of Toronto*.
- 2008 **MAT195S (Calculus II)**, *University of Toronto*.
- 2007 **MAT196S (Calculus A)**, *University of Toronto*.
- 2007 **MAT194S (Calculus I)**, *University of Toronto*.
- 2005 **MAT223S (Linear Algebra I)**, *University of Toronto*.
- 2004 **MAT223F (Linear Algebra I)**, *University of Toronto*.

Training

- 2009 **MAT1499 Teaching Large Mathematics Classes**, *University of Toronto*.

Supervisory Experience

Masters students supervised

- 2013 **Getachew Alemu Demessie**, *AIMS Ghana*, Current Position: Doctoral student at Heriot-Watt University in Edinburgh.
- 2013 **Grace Omollo Misereh**, *AIMS Ghana*, Current Position: Doctoral student at La Trobe University.
- 2013 **Yegbtsehiwot Zerihun Gebremariam**, *AIMS Ghana*, Current Employment: AIMS Tutor.

Publications

Submitted

- [1] David Li-Bland. The stack of higher internal categories and stacks of iterated spans. 2015. 38 pages.
URL <http://arxiv.org/abs/1506.08870>
- [2] David Li-Bland and Pavol Ševera. Coherent Quantization using Coloured Surfaces. 2015. 35 pages.
URL <http://arxiv.org/abs/1510.05615>

Published

- [3] David Li-Bland and Pavol Ševera. Moduli spaces for quilted surfaces and Poisson structures. *Documenta Mathematica*, 20:pages 1071–1135, 2015.
URL <http://arxiv.org/abs/1212.2097>
- [4] David Li-Bland and Pavol Ševera. On deformation quantization of poisson lie groups and moduli spaces of flat connections. *International Mathematics Research Notices*, 2015(15):pages 6734–6751, 2015.
URL <http://arxiv.org/abs/1307.2047>
- [5] David Li-Bland and Pavol Ševera. Symplectic and poisson geometry of the moduli spaces of flat connections over quilted surfaces. In Damien Calaque and Thomas Strobl, editors, *Mathematical Aspects of Quantum Field Theories*, Mathematical Physics Studies, pages 343–411. Springer International Publishing, 2015. ISBN 978-3-319-09948-4.
URL <http://arxiv.org/abs/1304.0737>
- [6] David Li-Bland. Pseudo-dirac structures. *Indagationes Mathematicae*, 25(5):pages 1054–1101, 2014. Poisson 2012: Poisson Geometry in Mathematics and Physics.
URL <http://arxiv.org/abs/1408.5365>
- [7] David Li-Bland and Eckhard Meinrenken. Dirac Lie groups. *Asian Journal of Mathematics*, 18(5):pages 779–815, 2014.
URL <http://arxiv.org/abs/1110.1525>
- [8] David Li-Bland and Eckhard Meinrenken. On the Van Est homomorphism for Lie groupoids. *L'Enseignement Mathématique*, 61(1-2), 2014.
URL <http://arxiv.org/abs/1403.1191>
- [9] David Li-Bland and Alan Weinstein. Selective Categories and Linear Canonical Relations. *SIGMA Symmetry Integrability and Geometry: Methods and Applications*, 10(100):pages 1–31, 2014.
URL <http://arxiv.org/abs/1401.7302>

- [10] David Li-Bland and Pavol Ševera. Integration of Exact Courant Algebroids. *Electronic Research Announcements in Mathematical Sciences*, 19:pages 58–76, 2012.
URL <http://arxiv.org/abs/1101.3996>
- [11] David Li-Bland. AV-Courant Algebroids and Generalized CR Structures. *Canadian Journal of Mathematics*, 63(4):pages 938–960, 2011.
URL <http://arxiv.org/abs/0811.4470>
- [12] David Li-Bland and Pavol Ševera. Quasi-Hamiltonian groupoids and multiplicative Manin pairs. *International Mathematics Research Notices*, (10):pages 2295–2350, 2011.
URL <http://arxiv.org/abs/0911.2179>
- [13] David Li-Bland and Eckhard Meinrenken. Courant algebroids and Poisson geometry. *International Mathematics Research Notices*, (11):pages 2106–2145, 2009.
URL <http://arxiv.org/abs/0811.4554>
- [Ph. D. Thesis](#)
- [14] David Li-Bland. *LA-Courant algebroids, and applications*. Ph.D. thesis, University of Toronto, 2012.
URL <http://arxiv.org/abs/1204.2796>

Service

Conferences

- July 2016 *Poisson 2016* Scientific/Advisory committee, jointly at Geneva and Zurich
- November 2014 *Gone Fishing* local co-organizer, U.C. Berkeley

Seminars

- Spring 2013 *Seminar on integration of Courant algebroids* co-organizer, U.C. Berkeley
- 2010-2011 *Symplectic geometry seminar* organizer, University of Toronto

Committees

- 2009-2010 *Departmental council*, University of Toronto
- 2009-2010 *Graduate planning committee*, University of Toronto
- 2008-2009 *Graduate seminar committee*, University of Toronto

Referee for

- Advances in Mathematics
- Cambridge University Press
- IMRN
- Journal of Differential Geometry
- Journal of Geometry and Physics
- Journal of Geometric Mechanics
- Journal of Symplectic Geometry
- Letters in Mathematical Physics
- Mathematical Research Letters
- Pacific Journal of Mathematics
- Proceedings of the Poisson 2010 Conference

- Proceedings of the Poisson 2012 Conference
- Quarterly Journal of Mathematics

Miscellaneous

AMS Math Reviews reviewer

- 2014 *AIMS Ghana* lecturer
- 2013 *AIMS Ghana* project supervisor

Talks

Invited Lecture Series and Mini Courses

- July 2014 University of Illinois at Urbana-Champaign, Poisson 2014, week long mini course, *Quasi-Poisson Geometry and Moduli of Flat Connections*.
- February 2013 Université de Genève, week long mini course. *Moduli spaces and quilted surfaces*.

Invited Conference Talks

- August 2014 University of Illinois at Urbana-Champaign, Poisson 2014, *Linear symplectic categories and quantization*.
- July 2012 Universiteit Utrecht, Poisson 2012, *Moduli spaces of flat connections on coloured surfaces*.
- June 2012 University of Regina, CMS Summer Meeting, Special Session on Geometry and Topology of Lie Transformation Groups, *Colored moduli spaces of flat connections*.
- October 2011 Washington University, Gone Fishing Meeting, *Lie subalgebroids of Courant algebroids*.
- November 2010 University of Notre Dame, AMS Fall Central Section Meeting, Special Session on Geometry and Lie Theory, *Some examples of symplectic groupoids*.
- May 2009 University of Hong Kong, Workshop on Geometry, *Courant algebroids and Poisson Geometry*.

Invited Seminar Talks

- October 2015 Northeastern, Graduate Research Seminar, *Is it safe to play with classical and quantum mechanics in a (linear) sandbox?*
- October 2015 University of Illinois at Urbana-Champaign, Symplectic and Poisson Geometry Seminar, *Coherent quantization using colored surfaces*.
- April 2015 U.C. Berkeley, Symplectic Seminar, *Coherent quantization using colored surfaces*.
- January 2015 Cornell, Lie groups Seminar, *Quantization using colored surfaces*.
- October 2014 Pennsylvania State University/Cornell, Joint Symplectic Seminar, *Moduli spaces of flat bundles over quilted surfaces*.
- October 2013 Fields Institute, gLab, *The moduli space of flat connections and spin networks*.
- October 2013 University of Toronto, Symplectic Geometry Seminar, *Quantization of the linear symplectic category*.
- November 2012 University of Toronto, Symplectic Geometry Seminar, *On moduli spaces*.

- October 2012 Stanford University, Northern California Symplectic Geometry Conference, *q-Poisson structures on the moduli spaces of flat connections over colored surfaces.*
- October 2010 University of Toronto, Symplectic Geometry Seminar, *Hamiltonian Spaces with Group Valued Moment Maps.*
- September 2009 University of Toronto, Symplectic Geometry Seminar, *Integration of quasi-Poisson structures.*
- February 2009 Université de Genève, Séminaire Groupes de Lie et espaces des modules, *Courant algebroids and Poisson Geometry.*
- January 2009 University of Toronto, Symplectic Geometry Seminar, *Courant algebroids and Poisson Geometry.*

Expository Talks

- October 2015 U.C. Berkeley, RTG Seminar, *Poisson geometry of moduli spaces of flat bundles.*
- April 2013 U.C. Berkeley, GRASP Seminar, *Poisson structures on moduli spaces for quilted surfaces.*
- April 2013 U.C. Berkeley, Seminar on Integrating Courant algebroids, *Ševera's Differentiation for Lie n -Groupoids.*
- February 2013 U.C. Berkeley, Seminar on Integrating Courant algebroids, *A first example: Crossed Modules and integration of action Courant algebroids, Part II.*
- January 2013 U.C. Berkeley, Seminar on Integrating Courant algebroids, *A first example: Crossed Modules and integration of action Courant algebroids.*
- February 2012 University of Toronto, Graduate Student Seminar, *Constraints in Hamiltonian Mechanics (or: How to keep a can from sliding down an incline (and make it roll instead)).*
- July 2010 University of Toronto, Informal Geometric Structures Seminar, *On Generalized Complex Structures from a Graded Geometry perspective.*
- July 2008 University of Toronto, Cool Stuff Seminar, *Synthetic Differential Geometry.*
- January 2008 University of Toronto, Graduate Student Seminar, *A Sneak Preview of Lie Algebroids and Dirac Geometry.*