

# Craig Westerland

## Curriculum Vitæ

Department of Mathematics & Statistics  
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### Personal

- **Citizenship:** United States.
- **Born:** 4 August, 1977 in Tarrytown, NY, USA.

### Employment

- **Future Fellow**, funded by the Australia Research Council, 2011 – 2014.
- **Lecturer**, University of Melbourne, Australia. August 2008 – present.
- **VIGRE Van Vleck Visiting Assistant Professor**, University of Wisconsin, Madison, WI. August 2005 – August 2008.
- **Postdoctoral Fellow**, University of Copenhagen, Denmark. July 2007 – December 2007.
- **Member**, Mathematical Sciences Research Institute, Berkeley, CA. Program: “New Topological Structure in Physics.” January 2006 – June 2006.
- **Member**, Institute for Advanced Study, Princeton, NJ. September 2004 – June 2005.

### Education

- **University of Michigan**, Ann Arbor, MI. Ph.D. in Mathematics, May 2004. Thesis title: *Stable splittings of configuration spaces of surfaces and related mapping spaces*. Advisor: Igor Kriz.
- **Williams College**, Williamstown, MA. B.A. (*magna cum laude*) in Mathematics (with Honors) and Astrophysics, June 1999.

### Publications and Preprints

- *Operads of moduli spaces of points in  $\mathbb{C}^d$* . To appear in the Proceedings of the American Mathematical Society (2012).
- with Nathalie Wahl, *Hochschild homology of structured algebras*. Preprint: arXiv:1110.0651 (2011).
- with Hisham Sati, *Twisted Morava K-theory and E-theory*. Preprint: arXiv:1109.3867 (2011).
- *Configuration spaces in topology and geometry*, Gazette of the Australian Mathematical Society, 38 (2011), no. 5, 279–283.
- with Igor Kriz and Joshua Levin, *The symplectic Verlinde algebras and string K-theory*, Journal of Topology, 3 (2010), no. 4, 901–936.
- with Jordan Ellenberg and Akshay Venkatesh, *Homological stability for Hurwitz spaces and the Cohen-Lenstra conjecture over function fields*. Preprint: arXiv:0912.0325 (2009).
- with Kate Gruher, *String topology prospectra and Hochschild cohomology*, Journal of Topology, 1 (2008), no. 4, 837–856.
- *Equivariant operads, string topology, and Tate cohomology*, Mathematische Annalen, 340 (2008), no. 1, 97–142.

- *String homology of spheres and projective spaces*, Algebraic & Geometric Topology 7 (2007) 309 – 325.
- *Stable splittings of surface mapping spaces*, Topology and its Applications 153 (2006), 2834 – 2865.
- *Dyer-Lashof operations in the string topology of spheres and projective spaces*, Mathematische Zeitschrift 250 (2005), no. 3, 711–727.

### Awards, Fellowships, and Other Activities

- **ARC Future Fellowship**, “Topology through applications: geometry, number theory, and physics,” FT100100307, University of Melbourne, 2011 – 2014.
- **ARC Discovery Grant**, “Homotopy theory: interactions with representation theory and moduli spaces,” DP1095831, University of Melbourne, 2010 – 2012.
- **Early Career Researcher Grant**, University of Melbourne, 2010.
- **NSF Standard Grant**, “Moduli Spaces and Algebraic Structures in Homotopy Theory,” DMS-0705428, University of Wisconsin, August 15, 2007 to July 31, 2010.
- **Rackham Dissertation Fellow**, University of Michigan, Winter 2003.
- **NSF VIGRE Graduate Fellow**, University of Michigan, September 2000 – August 2003.
- **Member** of the American Mathematical Society and Australian Mathematics Society.
- **Conference Co-organizer:**
  - *Conference on mapping class groups and operads*, University of Copenhagen, 3 – 7 Sep., 2007.
  - Special session on stringy topology, 1st PRIMA Congress, UNSW, Sydney, 6 – 10 July, 2009.
  - Special session on geometry and topology, 53rd meeting of the Australian Mathematics Society, University of South Australia, 28 Sep. – 1 Oct., 2009.
  - Special session on geometry and topology, 55th meeting of the Australian Mathematics Society, University of Wollongong, 26 – 29 Sep., 2011.
  - *Group-valued moment maps with applications to mathematics and physics*, Institute for Geometry and its Applications, Adelaide, 5 – 9 Sep., 2011.
  - Special session on algebraic topology, 2nd PRIMA Congress, Shanghai, June, 2013.
- **Seminar Organizer:**
  - Algebra-Geometry-Topology Seminar, University of Melbourne, July 2009 – present.
  - Postdoc Seminar and Postdoc Topology Seminar, MSRI, Spring 2006.

### Teaching

- **University of Melbourne.**
  - Geometry (MAST30024), Semester II, 2010, 2011.
  - Linear Algebra (MAST10007), Semester II, 2010.
  - Algebraic Topology (620-634) Semester I, 2009, 2010.
  - Topology (620-322), Semester II, 2009.
  - Differential Geometry (620-427), Semester II, 2008.
- **University of Copenhagen.** Introduction to String Topology, Fall 2007.
- **University of Wisconsin-Madison.**
  - Introductory Topology I and II (Math 751 and 752), Fall 2005, Spring 2007, Spring 2008.
  - Reading course on Characteristic Classes, Spring 2007.
  - Graduate Summer Enhancement Program in Topology, Summer 2005, 2006.
  - Calculus I (Math 221), Fall 2005, 2006.
- **University of Michigan.**
  - Calculus I (Math 115), Fall 2001.
  - Precalculus (Math 105), Fall 1999, Winter 2000.

### Postgraduate Students

- Jacobien Carstens, *Twisted K-theory and T-duality*, Master of Science, U. Amsterdam, 2009.
- Trithang Tran, *Mapping class groups and Lefschetz fibrations*, Bachelor of Science (Honours), University of Melbourne, 2010.
- Jeffrey Bailes, *Cohen-Lenstra heuristics and the cohomology of the braid group*, Master of Science, University of Melbourne, 2011.
- Sam Chow, *An introduction to algebraic number theory and the class number formula*, Bachelor of Science (Honours), University of Melbourne, 2011.

### Current Supervision

- Postdoc: Paul Sobaje.
- Ph.D. Students: Jeffrey Bailes, Drew Heard, Omar Ortiz, Trithang Tran.

### Invited Lectures and Conferences

- *Topologie*, Oberwolfach, Germany, 16-22 September, 2012.
- *Algebraic Topology: applications and new directions*. Stanford Symposium July 23-27, 2012.
- *Group-valued moment maps with applications to mathematics and physics*, Institute for Geometry and its Applications, Adelaide, 5 – 9 Sep., 2011.
- *The Cohen-Lenstra heuristics for class groups*, American Institute of Mathematics, Palo Alto, CA, USA, 13-17 June, 2011.
- *Dirac Operators in Geometry, Topology, Representation Theory, and Physics*, Institute for Geometry and its Applications, Adelaide, Australia, 18 – 22 October 2010.
- *54th and 55th Annual Meetings of the Australian Mathematical Society*, 2010, 2011.
- *Mathematics and Physics on the Borderline between Algebraic and Differential Geometry*, Canberra, Australia, 26 – 30 July 2010.
- *Algorithms, Algebra and Analysis in Four Dimensions*, Brisbane, Australia, 20 – 21 July 2010.
- *Geometry, Quantum Fields, and Strings: Categorical Aspects*, Oberwolfach, Germany, 6 – 12 June, 2010.
- *Workshop on New Currents in Geometry in Australia*, Adelaide, 18 November, 2009.
- *First PRIMA Conference*, Sydney, Australia, July 6 – 10, 2009.
- *26<sup>th</sup> and 27<sup>th</sup> Victorian Algebra Conferences*, Melbourne, Australia, October 2 – 3, 2008, November 5 – 6, 2009.
- *Young persons workshop on string topology and the topology of moduli spaces*, Stanford University, 24 – 27 July, 2008.
- *Hochschild and cyclic (co-)homology and applications to geometry and physics*, Max-Planck Institute, Bonn, 17 July, 2007.
- *Algebraic Topology: Old and New; M. M. Postnikov Memorial Conference*, Bedlewo, Poland. 19 June, 2007.
- *Midwest Topology Conference*, Bloomington, IA. 22 Oct. 2006.
- *First Copenhagen Topology Conference*, Copenhagen, Denmark. 5 Sept. 2006.
- Lewis and Clark College Summer REU, Portland, OR. 20 June 2006.
- *Stringy Topology in Morelia*, Morelia, Mexico. 16 Jan. 2006.
- *Stable and Algebraic Homotopy*, Schloss Ringberg, Germany. 2 Nov. 2005.
- Numerous topology/geometry seminars and meetings in Australia, Europe, and North America.