

GREGORY D. LANDWEBER

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Born: June 14, 1971
Princeton, NJ

Education

Harvard University, Ph.D. and A.M. in Mathematics, June, 1999.
Dissertation advised by C. H. Taubes: *Dirac Operators on Loop Spaces*.
Oxford University, M.Sc. in Mathematics, November, 1994.
Cambridge University, Certificate of Advanced Study in Mathematics
with Distinction (Tripos, Part III), June, 1993.
Princeton University, A.B. in Mathematics *summa cum laude*, June, 1992.
Certificate in Musical Performance (Bassoon), June, 1992.

**Positions
Held**

Bard College, Assistant Professor, 2007–present.
University of Oregon, Assistant Professor, 2001–2007.
University of Toronto/Fields Institute, Visitor/Researcher, 2004–2005.
Mathematical Sciences Research Institute, Post Doctoral Fellow, 2000–2001.
Microsoft Research, Post Doctoral Researcher, Theory Group, 1999–2000.
Harvard University, Teaching Fellow, 1997–1999.
Harvard University, Course Assistant, 1995–1996.

Honors

University of Oregon Faculty Summer Research Award
on *Low dimensional off-shell supersymmetry*, 2006.
National Science Foundation Graduate Research Fellowship
Department of Mathematics, Harvard University, 1994–1997.
British Marshall Scholar
Trinity College, Cambridge (1992–1993) and New College, Oxford (1993–1994).
Trinity College Senior Scholar, Trinity College, Cambridge, 1993.
Awarded a Churchill Scholarship, Declined, 1992.
Phi Beta Kappa, Princeton University, 1992.
Covington Prize, Princeton senior prize in mathematics, 1992.
Brown Prize, Princeton junior prize in mathematics, 1991.
Class of 1861 Prize, Princeton underclass prize in mathematics, 1990.
Putnam Mathematical Competition, Honorable mentions, 1989, 1990, 1991.
USA Mathematical Olympiad, Honorable mentions, 1988, 1989.

**Published
Papers**

- On the matter of $N = 2$ matter
(w/Chuck Doran, Mike Faux, Jim Gates, Tristan Hübsch, and Kevin Iga).
Physics Letters B **659** (2008), 441–446. [arXiv:0710.5245](#)
- The K -theory of abelian symplectic quotients (w/Megumi Harada).
Mathematical Research Letters **15** (2008), no. 1, 57–72. [arXiv:math.SG/0612660](#)
- A counter-example to a putative classification of 1-dimensional N -extended supermultiplets (w/Chuck Doran, Mike Faux, Jim Gates, Tristan Hübsch, and Kevin Iga).
Advanced Studies in Theoretical Physics **2** (2008), no. 3, 99–111.
[arXiv:hep-th/0611060](#)
- Adinkras and the dynamics of superspace prepotentials
(w/Chuck Doran, Mike Faux, Jim Gates, Tristan Hübsch, and Kevin Iga).
Advanced Studies in Theoretical Physics **2** (2008), no. 3, 113–164.
[arXiv:math-ph/0605269](#)
- On graph-theoretic identifications of Adinkras, supersymmetry representations and superfields (w/Chuck Doran, Mike Faux, Jim Gates, Tristan Hübsch, and Kevin Iga).
International Journal of Modern Physics A, to appear. [arXiv:math-ph/0512016](#)
- Surjectivity for Hamiltonian G -spaces in K -theory (w/Megumi Harada).
Transactions of the AMS **359** (2007), 6001–6025. [arXiv:math.SG/0503609](#)
- Twisted representation rings and Dirac induction.
Journal of Pure and Applied Algebra **206** (2006), no. 1–2, 21–54.
[arXiv:math.RT/0403524](#)
- Representation rings of Lie superalgebras.
K-Theory **36** (2005), no. 1–2, 115–168. [arXiv:math.RT/0403203](#)
- Multiplets of representations and Kostant’s Dirac operator for equal rank loop groups.
Duke Mathematical Journal **110** (2001), no. 1, 121–160. [arXiv:math.RT/0005057](#)
- Harmonic spinors on homogeneous spaces.
Representation Theory **4** (2000), 466–473 (electronic). [arXiv:math.DG/0005056](#)

Preprints

- Topology types of Adinkras and the corresponding representations of N -extended supersymmetry (w/Chuck Doran, Mike Faux, Jim Gates, Tristan Hübsch, Kevin Iga, and Robert Miller). [arXiv:0806.0050](#)
- Super-Zeeman embedding models on N -supersymmetric world-lines
(w/Chuck Doran, Mike Faux, Jim Gates, Tristan Hübsch, and Kevin Iga).
[arXiv:0803.3434](#)
- Off-shell supersymmetry and filtered Clifford supermodules
(w/Chuck Doran, Mike Faux, Jim Gates, Tristan Hübsch, and Kevin Iga).
[arXiv:math-ph/0603012](#)
- The K -theory of abelian versus nonabelian symplectic quotients (w/Megumi Harada).
[arXiv:math.SG/0601294](#)
- Singular instantons with $SO(3)$ symmetry. [arXiv:math.DG/0503611](#)
- K -theory and elliptic operators (expository). [arXiv:math.AT/0504555](#)

Conference Proceedings Relating doubly-even error-correcting codes, graphs, and irreducible representations of N -extended supersymmetry (w/Chuck Doran, Mike Faux, Jim Gates, Tristan Hübsch, and Kevin Iga), in *New Advances in Applied and Computational Mathematics*, eds. F. Liu et al., Nova Science Publishers, Inc., Hauppauge, NY, 2007.
arXiv:0806.0051

Construction of twisted K -theory classes from positive energy representations
Arbeitsgemeinschaft mit aktuellem Thema: Twisted K-Theory
Oberwolfach Report 46/2006, 2788–2791.

The topology of hyperkähler quotients (w/Megumi Harada and Graeme Wilkin)
BIRS Workshop Report 06rit317, August 19–26, 2006.

Off-shell supersymmetry via graph theory and superspace (w/Chuck Doran)
BIRS Workshop Report 06frg313, July 22–29, 2006.

Invited Talks

Institut Henri Poincaré, Paris. *Representations of Lie Groups and Applications*, December 15–18, 2008.

Bard College. Mathematics and Computer Science Colloquium, February 9, 2007.

Bennington College. January 5, 2007.

Winter 2006 CMS meeting. Invited speaker at session on *Poisson geometry and mathematical physics*, Toronto, December 9, 2006.

George Mason University, Combinatorics, Algebra and Geometry Seminar, October 31, 2006.

University of Maryland, Geometry/Topology and Superstring Theory Seminars, October 30, 2006.

University of Illinois at Urbana-Champaign, Joint Topology/Geometry Seminar, October 26, 2006.

Oberwolfach. Workshop on *Twisted K-theory*, Germany, October 12, 2006.

Johns Hopkins University, Topology Seminar, September 18, 2006.

Banff International Research Station. Research in Teams on *The topology of hyperkähler quotients*, August 19–26, 2006, **organizer**.

Banff International Research Station, Focused Research Group on *Off-shell supersymmetry via graph theory and superspace*, July 22–29, 2006, **organizer**.

Erwin Schrödinger International Institute for Mathematical Physics, Program on *Gerbes, Groupoids, and QFT*, Vienna, Austria, July 20, 2006.

University of Washington, Algebra Seminar, March 28, 2006.

University of Washington, Two talks in Superseminar and Math/Physics Seminar, January 19, 2006.

AMS Special Session on *K-theory in M-theory*, November 12–13, 2005, **organizer**.

University of Toronto, Symplectic Geometry Seminar, October 28, 2005.

UC Berkeley, Topology Seminar, September 21, 2005.

Banff International Research Station, Workshop on *Moment Maps in Various Geometries*, May 22, 2005.

Rutgers University, Geometry-Topology Seminar, April 19, 2005.

Harvard University, Gauge Theory Seminar, March 18, 2005.

University of Toronto, Symplectic Geometry Seminar, March 14, 2005.
University of Washington, K -theory and SUSY Workshop, February 10, 2005.
University of Toronto, Symplectic Geometry Seminar, November 8, 2004.
MIT, Topology Seminar, October 18, 2004.
AMS Special Session on *Strings and Branes*, Lawrenceville, NJ, April 17, 2004.
Oregon State University, Colloquium, April 22, 2003.
AMS Special Session on *Symplectic Geometry*, UC Irvine, November 11, 2001.
Fields Institute, Workshop on *Hamiltonian Group Actions and Quantization*, Toronto, June 9, 2001.
UC San Diego, Colloquium, April 5, 2001.
Penn State, Geometric Functional Analysis Seminar, February 5, 2001.
University of Toronto, Symplectic Geometry Seminar, October 23, 2000.
Influence of Physics on Topology Conference, UCSD, August 18, 2000.
Lehigh University Geometry and Topology Conference, June 12, 2000.
Reed College, *Introduction to String Theory*, November 11, 1999.
Microsoft Research, Theory Group Seminar, *String Theory for Mathematicians*. 14 lectures given from August 13, 1999 to March 1, 2000. Notes available on web site.
Harvard University, Gauge Theory Seminar, May 7, 1999.
University of Oregon, 18 talks in seminars, Institute for Theoretical Science.

Talks at **Language & Thinking**, String Theory, August 27, 2007.
Bard College **Math/CS Seminar**, Introduction to L^AT_EX, October 4, 2007 and February 26, 2008.
Math/CS Seminar, Introduction to K -theory, November 29, 2007.
Pi Day, What Archimedes didn't know about π , March 14, 2008.

Teaching at **Undergraduate Courses**: Calculus I, Linear Algebra, Topology, Differential Geometry, Problem Solving Seminar, Numerical Analysis Lab.
Bard College **Tutorials**: Lie Algebras, Matrix Theory, Numerical Differential Equations.
Senior Projects: Zach Hamaker (Clifford algebras), Julian Cowell (Quaternions).
Summer Research Students: Dexin Zhou, Zechao Zhou.

Service at **Bard Prison Initiative**, gave lecture at Woodbourne Prison, January 30, 2008.
Bard College **Fellowships and Awards Committee**, interviewed Marshall, Fulbright, and Watson scholarship candidates, 2007–2008.
Putnam, Supervised exam, provided breakfast and party, December 1, 2007.
Mathematics Search Committee, Interviewed candidates at AMS/MAA joint meeting in San Diego, January 6–9, 2008.
Physics Search Committee, 2008.

- Teaching at University of Oregon** **Online Row Reducer, Linear Algebrator.** Computer tools for linear algebra.
Course Coordinator, Linear Algebra, 2005-2006.
Undergraduate Courses: Linear Algebra ($\times 3$, highest recorded student evaluation score at UO), Numerical Analysis ($\times 2$, perfect student evaluation score), Differential Equations ($\times 2$), Discrete Mathematics, Business Calculus (highest student evaluation score at UO for the large lecture class since 2000)
Graduate Courses: Differential Geometry ($\times 2$), K -theory ($\times 2$), Graduate Topology Seminar ($\times 2$), Symplectic Geometry, Lie Groups, Characteristic Classes
Reading Courses: Linear Algebra, Quantum Physics, many graduate courses
Course Evaluation Scores: Available at <http://courseevals.uoregon.edu/>
- Graduate Students** **Ph.D. Advisor:** Peter Dolan.
Ph.D. Committee: 9 students in mathematics, physics, and computer science.
- Other** Referee for the National Science Foundation, the Journal of Differential Geometry, Advances in Mathematics, and Advances in Theoretical and Mathematical Physics.
Reviewer for AMS Mathematical Reviews (7 reviews).
Owner of Cohomology.com (my mathematical software site, as well as home to the Symplectic Geometry wiki).
Award winning Macintosh shareware author (*Kaleidoscope*, etc.), 1991–2002.