

**DANIEL S. FREED
CURRICULUM VITA**

PERSONAL DATA

Born:	April 17, 1959	Address:	Department of Mathematics
Citizenship:	U.S. Citizen		University of Texas at Austin
			Austin, TX 78712-1082
			(512) 471-7136
			email: dafr@math.utexas.edu

EDUCATION

Ph.D.	University of California, Berkeley (Advisor: I. M. Singer)	1985
M.A.	Harvard University	1981
B.A.	Harvard University (summa cum laude)	1981

PROFESSIONAL EXPERIENCE

1994–	Professor, University of Texas at Austin
1996–98	Member, Institute for Advanced Study, Princeton
Eté '95, '99	Visitor, Institut des Hautes Etudes Scientifiques
Fall '92, '93	Visitor, Geometry Center, Minneapolis
1989–94	Associate Professor, University of Texas at Austin
1987–89	NSF Postdoctoral Fellow and Assistant Professor, University of Chicago
1985–87	NSF Postdoctoral Fellow and Moore Instructor, MIT

PROFESSIONAL SOCIETIES

Member, American Mathematical Society

HONORS AND GRANTS

2007-2012	PI, NSF Research Training Grant in geometry
1988–current	NSF research grant
2005–2007	Cook Professorship in Mathematics
2002–2003	Guggenheim Fellow
2002	Invited speaker, International Congress of Mathematicians
2002	College of Natural Sciences Outreach Award
1990–1996	NSF Presidential Young Investigator Award
1990–1996	O'Donnell Foundation Grant
1988–1992	Alfred P. Sloan Research Fellowship
1985–1988	NSF Postdoctoral Fellowship in Mathematics
1981–1984	NSF Graduate Fellowship

PROFESSIONAL SERVICE

Institutes

2006–10	Board of Trustees, Mathematical Sciences Research Institute, Berkeley, California
2005–08	Scientific Advisory Board, Banff International Research Station, Banff, Alberta
2002–06	Scientific Advisory Council, Mathematical Sciences Research Institute, Berkeley, California

1990–99 Founder and Steering Committee, IAS/Park City Mathematics Institute

National Committees

2004–2006 American Mathematical Society Committee on Steele Prizes
 1998–2001 American Mathematical Society National Program Committee (chair in third year)
 1995 American Mathematical Society Task Force on Electronic Journals

Conferences

Co-organizer, “New Mathematical Methods in Quantum Gauge Theories”, Aspen Center for Physics, July, 2010.
 Co-organizer, “Hodge Theoretic Reflections on the String Landscape”, International Centre for Mathematical Sciences, Edinburgh, Scotland, June, 2010.
 Co-organizer, “Geometry, Quantum Fields and Strings: Categorical Aspects”, Oberwolfach, Germany, June, 2010.
 Co-organizer, “String Theory and Quantum Geometry”, Aspen Center for Physics, July, 2007.
 Co-organizer, “Twisted K -Theory”, Arbeitsgemeinschaft, Oberwolfach, Germany, October, 2006.
 Co-organizer, Texas Geometry and Topology Conference, Austin, Texas, October, 2005.
 Co-organizer, “Strings, Branes and Superpotentials”, Aspen Center for Physics, July–August, 2004.
 Co-organizer, “Workshop on Symplectic Geometry and Mathematical Physics”, Mathematical Sciences Research Institute, March, 2004.
 Co-organizer, “Workshop on Geometry and String Theory”, Institute for Theoretical Physics, Santa Barbara, July, 2003.
 Co-organizer, “Karenfest”, Texas Geometry and Topology Conference in honor of Karen Uhlenbeck’s 60th birthday, University of Texas at Austin, October, 2002.
 Co-organizer, “Workshop on Infinite-dimensional Algebras, Conformal Field Theory and Supersymmetry”, Mathematical Sciences Research Institute, April, 2002.
 Co-organizer, Graduate Summer School and Research Program on “Quantum Field Theory, Supersymmetry, and Enumerative Geometry”, IAS/Park City Mathematics Institute, July, 2001.
 Co-organizer, Special Session on “Recent Developments in Index Theory”, Central Sectional Meeting of AMS, Austin, October, 1999.
 Organizing Committee for Summer School on Geometry and Theoretical Physics, Institute for Theoretical Physics, Santa Barbara, July, 1999.
 Co-organizer, Texas Geometry and Topology Conference, Austin, Texas, October, 1998.
 Organizing Committee for Workshop on Duality in Mathematics and Physics, Aspen Center for Physics, July, 1996.
 Co-organizer, Special Session on “Geometry, Topology, and Quantum Field Theory”, Eastern sectional meeting of AMS, Boston, October, 1995.
 Co-organizer, Texas Geometry and Topology Conference, Austin, Texas, April, 1994.
 Co-organizer, Texas Geometry and Topology Conference, Austin, Texas, October, 1991.
 Chairman, Organizing Committee for Workshop on Mathematical Ideas Arising from Conformal Field Theory, held at the Aspen Center for Physics, 1989.
 Member, Organizing Committee for AMS Joint Summer Research Conference on Elliptic Cohomology, Brunswick, Maine, 1988.
 Chairman, Organizing Committee for Workshop on Differential Geometry, held at the Aspen Center for Physics, 1987.

Panels

Member of a panel to review Department of Energy’s Applied Mathematics Research Program, April, 1993.

Member of NSF panel in Mathematics, 2009.

Editor

Associate Editor for *AMS Bulletin* articles.

Editor of *Advances in Mathematics*.

Editor of *Communications in Contemporary Mathematics*.

Editor of *Gokova Geometry/Topology Journal*.

Editor of *Park City Mathematics Series*, publications of the IAS/Park City Mathematics Institute, 1993–1999.

Associate Editor for Research Announcements in *Bulletin of American Mathematical Society*, 1992–1994.

Referee

Commun. Math. Phys., J. Diff. Geo., J. Amer. Math. Soc., Topology, Memoirs Amer. Math. Soc., Experimental Math., Transactions AMS, Comm. Pure Appl. Math., Crelles J., Duke Math. J., Mathematische Annalen, J. Math. Phys., Phys. Rev., Commun. Anal. Geom., J. Funct. Anal., Proc. Amer. Math. Soc., Composito Mathematica, Contemp. Math., Math. Res. Lett., Indiana Math. J., Nucl. Phys. B., J. Geom. Phys., Rev. Math. Phys., Electronic Research Announcements, Math. Scand., Cahiers de Top. et Geom Diff., J. Math. Phys., Rev. Math. Phys., Electronic Research Announcements, J. Pure Appl. Algebra, Annales de l'Institut Fourier, Pacific J. Math, J. Top.

Reviewer

Mathematical Reviews, Bull. Amer. Math. Soc., Notices of AMS

INVITED LECTURES

Invited speaker at “Quantum Geometry and Algebraic Structures”, Institut de Mathématiques de Luminy, Marseilles, France, May, 2011.

Invited speaker at 60th birthday conference for Michael Freedman, Station Q, Santa Barbara, April, 2011.

Eisenbud lecture series (3 lectures), Brandeis University, Boston, April, 2010.

Kempf lecture series (2 lectures), Johns Hopkins University, Baltimore, March, 2010.

Invited speaker at “Midwest conference on topology and physics”, Ann Arbor, February, 2010.

Invited speaker at “Mathematical Methods in General Relativity and Quantum Field Theories”, Paris, November, 2009.

Invited speaker at “Strings, Fields and Topology”, Oberwolfach, Germany, June, 2009.

Invited speaker at “Topological Field Theory”, Northwestern University, Evanston, May, 2009.

Invited speaker at “Topology, C^* -algebras, and String Duality”, Texas Christian University, Fort Worth, May, 2009.

Invited speaker at “Gauge theory and Langlands duality”, Kavli Institute for Theoretical Physics, Santa Barbara, July, 2008.

Invited speaker at “Geometry and Physics: Special Metrics and Supersymmetry”, Bilbao, Spain, May, 2008.

Invited speaker at “Geometry and Physics”, Hausdorff Research Institute for Mathematics, Bonn, Germany, May, 2008.

Invited speaker at “The Mathematical Sciences from the 20th to the 21st Century”, a celebration of the 25th anniversary of the Mathematical Sciences Research Institute, Berkeley, California, January, 2008.

Invited speaker at “Texas Geometry and Topology Conference”, College Station, Texas, October, 2007.

- Invited plenary speaker at “Abel Symposium in Algebraic Topology”, Oslo, Norway, August, 2007.
- Invited speaker at “Maxwell Institute Colloquium on Conformal Field Theory and Topology”, Edinburgh, Scotland, May, 2007.
- Invited speaker at “Geometry Festival”, Maryland, April, 2007.
- Niven lecturer (2 lectures), University of Oregon, Eugene, Oregon, April, 2007.
- Invited speaker at Nigel Hitchin’s 60th birthday celebration, Madrid, Spain, September, 2006.
- Invited speaker (3 lectures) at “XVth Oporto Meeting on Geometry, Topology and Physics”, Oporto, Portugal, July, 2006.
- “Andrejewski Lecture series” (3 lectures), Max Planck Institute for Mathematics, Leipzig, Germany, April, 2006.
- Invited speaker at “Pacific Northwest Geometry Seminar”, Palo Alto, California, February, 2006.
- Invited speaker (lecture in memory of Raoul Bott) at “Black holes, topological strings, and invariants of holomorphic submanifolds”, Harvard University, Boston, Massachusetts, January, 2006.
- Invited speaker at “Stringy Topology in Morelia”, Morelia, Mexico, January, 2006.
- Invited speaker at “Simons Workshop in Mathematics and Physics”, Stony Brook, New York, August, 2005.
- Invited speaker at “Geometric Topology and Connections with Quantum Field Theory”, Oberwolfach, Germany, June, 2005.
- Plenary speaker at Canadian Mathematical Society summer meeting, Waterloo, Canada, June, 2005.
- Invited speaker at “Symposium on the First Superstring Revolution”, Aspen Center for Physics, Aspen, Colorado, August, 2004.
- Invited speaker at “AMS-SIAM Conference on String Geometry”, Snowbird, Colorado, June, 2004.
- Invited speaker at Midwest Topology Seminar, Northwestern University, Evanston, Illinois, February, 2004.
- Invited speaker at “Elliptic Cohomology and Chromatic Phenomena”, Isaac Newton Institute, Cambridge, England, December, 2002.
- Invited speaker in Mathematical Physics section, International Congress of Mathematicians, Beijing, China, August, 2002.
- Invited speaker at “Stringy Orbifolds”, Chengdu, China, August, 2002.
- Invited speaker (2 lectures) at “Current Developments in Mathematics”, Harvard University, November, 2001.
- Invited speaker (7 lectures) at Graduate Summer School “Quantum Field Theory, Supersymmetry, and Enumerative Geometry”, IAS/Park City Mathematics Institute, July, 2001.
- Invited speaker (4 lectures) at “Duality Workshop: A Math/Physics Collaboration”, Institute for Theoretical Physics, Santa Barbara, June, 2001.
- Invited speaker at “New interfaces in geometry and physics”, Miraflores de la Sierra, Spain, June, 2001.
- Invited speaker at Clifford Lectures Conference, Tulane University, November, 2000.
- Invited speaker at “International Congress of Mathematical Physics”, London, England, July, 2000.
- Invited speaker at Gokova Topology/Geometry Conference, Gokova, Turkey, May, 2000.
- Invited speaker at “Special Program on Geometry and Topology”, Feza Gursey Institute of Istanbul, Turkey, May, 2000.
- Plenary speaker at “Strings, Duality, and Geometry”, Montreal, Canada, March, 2000.
- Invited speaker at “Geometry, Duality and Hodge theory”, Irvine, March, 2000
- Invited speaker at “Texas Geometry and Topology Conference”, Texas A&M, College Station, November, 1999.

- Invited speaker at “A Fiftieth Anniversary Celebration of the Postdoctoral Instructorship in Mathematics at MIT”, Boston, October, 1999.
- Invited speaker (3 lectures) at “Mathematics from Physics”, University of Illinois, Urbana-Champaign, May, 1999.
- Invited speaker at “Southern California Geometric Analysis Seminar”, University of California at Irvine, February, 1999.
- Invited speaker at Pacific Northwest Geometry Symposium, Eugene, Oregon, November, 1998.
- Invited speaker (5 lectures) at “Geometry and Duality”, Institute for Theoretical Physics, Santa Barbara, January, 1998.
- Invited speaker at “Trimestre de Physique/Mathematique: Integrales Fonctionnelles”, Centre Emile Borel, Paris, December, 1997.
- Invited speaker at “Workshop on Higher Category Theory and Physics”, Northwestern University, March, 1997.
- Invited speaker at “Moduli Spaces in Geometry and Physics”, University of Florida, February, 1997.
- Invited speaker at Special Session on “Moduli Spaces of Vector Bundles over Riemann Surfaces”, Rider College, October, 1996.
- Invited hour address at Eastern sectional meeting of AMS, Boston, October, 1995.
- Invited speaker at “Geometry and Physics”, Aarhus, Denmark, July, 1995.
- Invited speaker at Gokova Topology/Geometry Conference, Gokova, Turkey, June, 1995.
- Invited speaker at Special Session on Topology and Geometry (AMS-IMU Conference), Jerusalem, Israel, May, 1995.
- Invited speaker at “Topological and Geometrical Problems Related to Quantum Field Theory”, Trieste, Italy, March, 1995.
- Invited speaker at “Particles and Fields, 1994”, Banff, Alberta, August, 1994.
- Invited speaker at Namboodiri Conference, University of Chicago, May, 1994.
- Invited speaker at “Mathematical Physics and Geometry”, Mathematical Sciences Research Institute, Berkeley, January, 1994.
- Invited speaker at “Spectral Geometry”, Mathematical Sciences Research Institute, Berkeley, November, 1993.
- Invited speaker at “Conformal Field Theory, Operator Algebras and Low-Dimensional Topology”, Warwick, England, August, 1993.
- Invited speaker at Geometry and Topology Conference in honor of Raoul Bott’s 70th birthday, Harvard University, April, 1993.
- Invited speaker at Special Session “Knots and Topological Quantum Field Theory” (AMS Conference), Dayton, Ohio, October, 1992.
- Invited speaker at “Symposium on Gauge Theory, Geometry, and Topology”, Warwick, England, July 1992.
- Invited speaker at “New Index Theories and Applications”, Oxford, England, July 1992.
- Plenary speaker at “XIX International Colloquium on Group Theoretical Methods in Mathematical Physics”, Salamanca, Spain, June 1992.
- Invited speaker (5 lectures) at the summer school “Recent Problems in Mathematical Physics”, Salamanca, Spain, June 1992.
- Invited speaker at Clifford Lectures Conference, Tulane University, February 1992.
- Invited speaker and participant in US/USSR Meeting “Mathematics and String Theory”, Mathematical Sciences Research Institute, Berkeley, June 1991.
- Invited speaker at “Applications of Algebraic Topology to Geometry and Analysis”, Mathematical Sciences Research Institute, Berkeley, January 1990.

Invited speaker (5 lectures) at “College on Global Geometric and Topological Methods in Analysis”, International Centre for Theoretical Physics, Trieste, Italy, December 1988.

Invited speaker at the AMS Joint Summer Research Conference “Geometric and Topological Invariants of Elliptic Operators”, Brunswick, Maine, July 1988.

Invited speaker at the CBMS Conference “Gauge Theory”, St. Louis, June 1987.

Selected Colloquia and Seminars 1986–2009: Bar-Ilan University, Boston University, Brandeis, Brown, Cal Tech, City University of New York, Columbia, Concordia, Geometry Center, Harvard, Institute for Advanced Study, Kansas State University, Mathematical Sciences Research Institute, McGill, MIT, New Mexico State, Northwestern, Orsay, Oxford, Princeton, Rice, Rockefeller, Rutgers, Stanford, Texas A & M, Tel Aviv University, Technion, Texas Christian University, Tulane, University of Barcelona, University of California at San Diego, University of California at Santa Barbara, University of Chicago, University of Houston, University of Illinois, University of Kansas, University of Maryland, University of Michigan, University of Minnesota, University of North Carolina, University of Pennsylvania, University of Texas, University of Toronto, University of Toulouse, University of Utah, University of Virginia, University of Warwick, University of Wisconsin, Virginia Polytechnic Institute, Yale.

UNIVERSITY AND DEPARTMENTAL COMMITTEES

University Committee Service

Faculty Council, 2008–2009.

College of Natural Sciences Outreach Excellence Award Committee, 2007–2008.

College of Natural Sciences Promotion and Tenure Committee, 2003–2005.

Department Committee Service

Departmental strategic planning committee, 2004 (chair), current.

Departmental committee for assistant professor hiring, 1994–1995, 1998–2000 (chair), 2001–2002.

Departmental sub-committee on chairs, 1992–1996, 2001–current.

Departmental review committee for hiring and promotions, 1992–1996, 2004–2006, 2007 (chair), current.

Departmental committee for external review, 1995–1996.

Departmental committee for graduate program, 1991, 1992, 1999–2002.

COURSES TAUGHT

<i>Course</i>	<i>Title</i>
328K	Introduction to Number Theory
361	Complex Variables
362K	Introduction to Probability
373K	Algebraic Structures I
375	Curves and Surfaces
375T	Complex Variables II
382D	Differential Topology
382E	Algebraic Topology
392C	Mechanics and Symplectic Geometry
392C	Topological Quantum Field Theory
392C	Riemannian Geometry
392C	Lie Groups
392C	Geometry of Moduli Spaces
392C	Index Theory

392C	Introduction to Field Theory
392C	Loop Groups and Algebraic Topology
392C	Topics in Geometry and Physics
397S	Geometry Literature
408C	Differential and Integral Calculus–Honors
427K	Differential Equations
427L-AP	Vector Calculus

GRADUATE STUDENT SUPERVISION AND COMMITTEE PARTICIPATION

Ph.D. Degrees Supervised

Braxton Collier, Mathematics, Ph.D., current
 Orit Davidovich, Mathematics, Ph.D., current
 Michael Ortiz, Mathematics, Ph.D., 2009
 Spencer Stirling, Mathematics, Ph.D., 2008
 Alexander Kahle, Mathematics, Ph.D., 2008
 Kevin Klonoff, Mathematics, Ph.D., 2008
 Matthew Scholl, Mathematics, Ph.D., 2006
 Jerry Jenquin, Physics, Ph.D., 2004
 (with Karen Uhlenbeck) Fergus O’Dea, Mathematics, Ph.D., 2000
 Mihaela Manilou, Physics, Ph.D., 1997
 Rob Harrington, Physics, Ph.D., 1996

Membership on Ph.D. Committees

Brendan McLellan, Mathematics, Ph.D., University of Toronto, in progress
 Fabio Ferrari, Physics, Ph.D., SISSA/SIAS, in progress
 Michael Williams, Mathematics, Ph.D., in progress
 Davi Nogueira, Mathematics, Ph.D., in progress
 Hassan, Syed Asif, Physics, Ph.D., in progress
 Sean Bowman, Mathematics, Ph.D., in progress
 Chacaltana, Oscar, Physics, Ph.D., in progress
 Carl Mautner, Mathematics, Ph.D., in progress
 Marcus Torres, Physics, Ph.D., in progress
 Parker Lowry, Mathematics, Ph.D., in progress
 Stephen Young, Physics, Ph.D., in progress
 Philip Schmitz, Mathematics, Ph.D., in progress
 Chi Hin Chan, Mathematics, Ph.D., in progress
 Jeffrey Olson, Physics, Ph.D., in progress
 Mohamed Chakhad, Physics, Ph.D., 2009
 Raphael Flauger, Physics, Ph.D., 2009
 Mark Luxton, Mathematics, Ph.D., 2008
 Timm Wrase, Physics, Ph.D., 2008
 Matthias Ihl, Physics, Ph.D., 2008
 Michael Gagliardo, Mathematics, Ph.D., 2007
 Jeremy Van Horn-Morris, Mathematics, Ph.D., 2007
 Jason Deblois, Mathematics, Ph.D., 2007
 Marija Zanic, Physics, Ph.D., 2007
 David Ben McReynolds, Mathematics, Ph.D., 2006
 Edoardo Angelo Di Napoli, Physics, Ph.D., 2005

Adam Parker, Mathematics, Ph.D., 2005
 Rachele Davis, Music, Ph.D., 2004
 Noah Goodman, Mathematics, Ph.D., 2003
 Eric Nicholson, Physics, Ph.D., 2003
 Li Jiang, Physics, Ph.D., 2003
 Andre Mandolesi, Mathematics, Ph.D., 2002
 Rahul Mahajan, Physics, Ph.D., 2002
 Alexandre Goncalves, Mathematics, Ph.D., 2002
 Amir-Kian Kashani-Poor, Physics, Ph.D., 2002
 Robert McNees, Physics, Ph.D., 2002
 Elie Gorbato, Physics, Ph.D., 2001
 Yungui Gong, Physics, Ph.D., 2001
 Mark Haskins, Mathematics, Ph.D., 2000
 Chun-Yen Wang, Physics, Ph.D., 2000
 Fergus O’Dea, Mathematics, Ph.D., 2000
 Angela Gibney, Mathematics, Ph.D., 2000
 David Chatterjee, Mathematics, Ph.D., Oxford University, 1998
 David Berenstein, Physics, Ph.D., 1998
 Eugene Perevalov, Physics, Ph.D., 1998
 Govindan Rajesh, Physics, Ph.D., 1998
 Jay Handfield, Mathematics, Ph.D., 1998
 Chin Young Bergbauer, Mathematics, Ph.D., 1998
 Moshe Rozali, Physics, Ph.D., 1996
 Cristea Avram, Physics, Ph.D., 1996
 Terry Fuller, Mathematics, Ph.D., 1995
 Dubravka Jancic, Physics, Ph.D., 1995
 John La Chapelle, Physics, Ph.D., 1995
 Edward Derrick, Physics, Ph.D., 1994
 Makoto Natsumme, Physics, Ph.D., 1994
 Donald Maroff, Physics, Ph.D., 1992
 Johan Rade, Mathematics, Ph.D., 1991

PUBLICATIONS

Books

1. (with K. Uhlenbeck), “Instantons and Four-Manifolds”, MSRI Publications, Volume 1, Springer-Verlag, New York, 1984, 1991 (Second Edition).
2. “Five Lectures on Supersymmetry”, American Mathematical Society, Providence, RI, 1999.

Books Edited

3. (edited with K. Uhlenbeck), “Geometry and Quantum Field Theory”, IAS/Park City Mathematics Series, 1. American Mathematical Society, Providence, RI; Institute for Advanced Study (IAS), Princeton, NJ, 1995.
4. (edited with P. Deligne, P. Etingof, L. Jeffrey, D. Kazhdan, J. Morgan, D. Morrison, E. Witten), “Quantum Fields and Strings: A Course for Mathematicians”, American Mathematical Society, Providence, RI, 1999.
5. (edited with D. Morrison, I. Singer), “Quantum Field Theory, Supersymmetry, and Enumerative Geometry”, IAS/Park City Mathematics Series, 11. American Mathematical Society, Providence, RI; Institute for Advanced Study (IAS), Princeton, NJ, 2006.

Research Articles

6. (with L. A. Shepp), *A poisson process whose rate is a hidden Markov process*, *Advances in Applied Probability*, **14** (1982), 21–36.
7. (with Jean-Michel Bismut) *Fibré déterminant et invariant éta*, *C. R. Acad. Sci. Paris. Sér. I Math.*, **301** (1985), 707–710.
8. *Flag manifolds and Kahler geometry*, *Infinite Dimensional Groups* (ed. V.G. Kac), MSRI Publications, Volume 4, Springer-Verlag, New York, 1985.
9. (with P. C. Fishburn, P. Frankl, J. C. Lagarias, A. M. Odlyzko), *Probabilities for intersecting systems and random subsets of finite sets*, *SIAM J. Alg. Disc. Meth.*, **7** (1986), 73–79.
10. (with Jean-Michel Bismut), *The analysis of elliptic families. I. Metrics and connections on determinant bundles*, *Commun. Math. Phys.*, **106** (1986), 159–176.
11. (with Jean-Michel Bismut), *The analysis of elliptic families. II. Dirac operators, eta invariants, and the holonomy theorem*, *Commun. Math. Phys.*, **107** (1986), 103–163.
12. *Determinants, Torsion, and Strings*, *Commun. Math. Phys.*, **107** (1986), 483–513.
13. (with Cumrun Vafa), *Global anomalies on orbifolds*, *Commun. Math. Phys.*, **110** (1987), 349–389.
14. *On determinant line bundles*, in “Mathematical Aspects of String Theory” (ed. S. T. Yau), World Scientific Publishing, 1987.
15. *Z/k -Manifolds and families of Dirac operators*, *Invent. Math.*, **92** (1988), 243–254.
16. *The geometry of loop groups*, *J. Diff. Geom.*, **28** (1988), 223–276.
17. *An index theorem for families of Fredholm operators parametrized by a group*, *Topology*, **27** (1988), 279–300.
18. (with David Groisser), *The basic geometry of the manifold of Riemannian metrics and of its quotient by the diffeomorphism group*, *Mich. Math J.*, **36** (1989), 323–344.
19. *Anomalies and determinant line bundles*, XVIIth International Colloquium on Group Theoretical Methods in Physics (Sainte-Adele, PQ, 1988), World Scientific Publishing, Teaneck, NJ, 1989.
20. (with Robert Gompf), *Computer tests of Witten’s Chern-Simons theory against the theory of three-manifolds*, *Phys. Rev. Lett.*, **66** (1991), 1255–1258.
21. (with Robert Gompf), *Computer calculation of Witten’s 3-manifold invariant*, *Commun. Math. Phys.*, **141** (1991), 79–117.
22. (with Richard Melrose), *A mod k index theorem*, *Invent. Math.*, **107** (1992), 283–299.
23. *Reidemeister torsion, spectral sequences, and Breiskorn spheres*, *J. reine Math.*, **429** (1992), 75–89.
24. (with Frank Quinn), *Chern-Simons theory with finite gauge group*, *Commun. Math. Phys.*, **156** (1993), 435–472, ([arXiv:hep-th/9111004](https://arxiv.org/abs/hep-th/9111004)).
25. *Extended structures in topological quantum field theory*, in “Quantum Topology” (eds. L. H. Kauffman and R. A. Baadhio), World Scientific, 1993, 162–173, ([arXiv:hep-th/9306045](https://arxiv.org/abs/hep-th/9306045)).
26. *A gluing law for the index of Dirac operators*, in “Global Analysis in Modern Mathematics (ed. K. K. Uhlenbeck), Publish or Perish, 1993, 5–14.
27. *Locality and integration in topological field theory*, in “Group Theoretical Methods in Physics, Volume 2” (eds. M.A. del Olmo, M. Santander and J. M. Guilarte), Ciemat, 1993, 35–54, ([arXiv:hep-th/9209048](https://arxiv.org/abs/hep-th/9209048)).
28. *Lectures on topological quantum field theory*, in “Integrable Systems, Quantum Groups, and Quantum Field Theories” (eds. L. A. Ibort and M. A. Rodríguez), Kluwer Academic Publishers, 1993, 95–156.
29. *Higher algebraic structures and quantization*, *Commun. Math. Phys.*, **159** (1994), 343–398, ([arXiv:hep-th/9212115](https://arxiv.org/abs/hep-th/9212115)).

30. (with Xianzhe Dai) *η -Invariants and determinant lines*, J. Math. Phys., **35** (1994), 5155–5194, (arXiv:hep-th/9405012).
31. *Classical Chern-Simons theory, 1*, Adv. Math., **113** (1995), 237–303, (arXiv:hep-th/9206021).
32. *Characteristic numbers and generalized path integrals*, in “Geometry, Topology, & Physics for Raoul Bott” (ed. S.-T. Yau), International Press, 1995, 126–138, (arXiv:dg-ga/9406002).
33. (with Xianzhe Dai) *η -invariants and determinant lines*, C. R. Acad. Sci. Paris Ser. I Math. **320** (1995), no. 5, 585–591, (arXiv:hep-th/9405012).
34. *Determinant line bundles revisited*, “Geometry and Physics (Aarhus, 1995),” 187–195, Lecture Notes in Pure and Appl. Math., **184**, Dekker, New York, 1997, (arXiv:dg-ga/9505002).
35. *Two index theorems in odd dimensions*, Commun. Anal. Geom., **6** (1998), 317–329 (arXiv:dg-ga/9601005).
36. (with J. Harvey, R. Minasian, G. Moore) *Gravitational anomaly cancelation for M-theory five-branes*, Adv. Theor. Math. Phys., **2** (1998), (arXiv:hep-th/9803205).
37. *Quantum groups from path integrals*, proceedings of “Particles and Fields (Banff, 1994)”, 63–107, CRM Ser. Math. Phys., Springer, New York, 1999, (q-alg/9501025).
38. *Special Kähler manifolds*, Commun. Math. Phys., **203** (1999), 31–52, (arXiv:hep-th/9712042).
39. (with P. Deligne) *Classical field theory*, in “Quantum Fields and Strings: A Course for Mathematicians” (ed. P. Deligne, P. Etingof, D. Freed, L. Jeffrey, D. Kazhdan, J. Morgan, D. Morrison, E. Witten), American Mathematical Society, Providence, RI, 1999, pp. 137–225.
40. (with P. Deligne) *Supersolutions*, in “Quantum Fields and Strings: A Course for Mathematicians” (ed. P. Deligne, P. Etingof, D. Freed, L. Jeffrey, D. Kazhdan, J. Morgan, D. Morrison, E. Witten), American Mathematical Society, Providence, RI, 1999, pp. 227–355, (arXiv:hep-th/9901094).
41. (with E. Witten) *Anomalies in string theory with D-branes*, Asian J. Math, **3** (1999), 819–851, (arXiv:hep-th/9907189).
42. (with M. Hopkins) *On Ramond-Ramond fields and K-theory*, J. High Energy Phys. 2000, no. 5, Paper 44, 14 pp., (arXiv:hep-th/0002027).
43. *Dirac charge quantization and generalized differential cohomology*, Surv. Differ. Geom. VII, 2000, 129–194 (arXiv:hep-th/0011220).
44. *The Verlinde algebra is twisted equivariant K-theory*, Turkish J. Math., **25** (2001), pp. 159–167, (arXiv:math.RT/0101038).
45. *K-theory in quantum field theory*, Current Developments in Mathematics 2001, International Press, Somerville, MA, pp. 41–87 (arXiv:math-ph/0206031).
46. *Classical Chern-Simons theory, Part 2*, Houston J. Math., **28** (2002), pp. 293–310.
47. *Twisted K-theory and loop groups*, Proceedings of the International Congress of Mathematicians, Beijing 2002, Volume III, Higher Education Press, 2002, pp. 419–430, (arXiv:math.AT/0206237).
48. (with G. Moore) *Setting the quantum integrand of M-theory*, Commun. Math. Phys., **263** (2006), pp. 89–132, (arXiv:hep-th/0409135).
49. *Classical field theory and supersymmetry*, “Quantum Field Theory, Supersymmetry, and Enumerative Geometry”, IAS/Park City Mathematics Series, 11. American Mathematical Society, Providence, RI; Institute for Advanced Study (IAS), Princeton, NJ, 2006.
50. (with E. Diaconescu, G. Moore) *The M-theory 3-form and E_8 gauge theory*, Elliptic Cohomology (Proceedings of the Workshop on Elliptic Cohomology and Chromatic Phenomena (2002)), London Math. Soc. Lecture Note Ser., 342, Cambridge Univ. Press, Cambridge, 2007, 44–88, (arXiv:hep-th/0312069).
51. (with G. Moore and G. Segal) *Heisenberg groups and noncommutative fluxes*, Annals of Physics, **322** (2007), pp. 236–285, (arXiv:hep-th/0605200).

52. (with G. Moore and G. Segal) *The uncertainty of fluxes*, Commun. Math. Phys., **241** (2007), pp. 242–274, ([arXiv:hep-th/0605198](#)).
53. (with M. Hopkins, C. Teleman) *Twisted equivariant K-theory with complex coefficients*, J. Topology, **1** (2008), pp. 16–44, ([arXiv:math.AT/0206257](#)).
54. *Survey of D-Branes and K-Theory*, “Handbook of Pseudo-Riemannian Geometry and Super-symmetry”, to appear.
55. *Pions and Generalized Cohomology*, J. Diff. Geom., **80** (2008), pp. 45–77, ([arXiv:hep-th/0607134](#)).
56. (with M. Hopkins, C. Teleman) *Consistent Orientation of Moduli Spaces*, in “The Many Facets of Geometry: A Tribute to Nigel Hitchin”, J-P Bourguignon, O. Garcia-Prada, S. Salamon, eds., Oxford University Press, 2009 ([arXiv:0711.1909 \[math.AT\]](#)).
57. *Remarks on Chern-Simons theory*, Bull. Amer. Math. Soc. **46** (2009), 221–254, ([arXiv:0808.2507 \[math.AT\]](#)).
58. (with M. Hopkins, C. Teleman) *Loop groups and twisted K-theory I*, ([arXiv:0711.1906 \[math.AT\]](#)).
59. (with M. Hopkins, C. Teleman) *Loop groups and twisted K-theory II*, ([arXiv:math.AT/0511232](#)).
60. (with M. Hopkins, C. Teleman) *Loop groups and twisted K-theory III*, ([arXiv:math.AT/0312155](#)).
61. (with M. Hopkins, J. Lurie, C. Teleman) *Topological quantum field theories from compact Lie groups*, “A Celebration of the Mathematical Legacy of Raoul Bott”, to appear, ([arXiv:0905.0731](#)).
62. (with J. Lott) *An index theorem in differential K-theory*, ([arXiv:0907.3508](#)).

Encyclopedia Articles

63. *Gauge theory*, “La matematica” (4 volume Italian encyclopedia), to appear.

Book Reviews

64. C. Nash, “Differential Topology and Quantum Field Theory,” Bull. Amer. Math. Soc., **28** (1993), 153–156.
65. J. J. Duistermaat, “The Heat Kernel Lefschetz Fixed Point Formula for the $Spin^c$ Dirac Operator,” Bull. Amer. Math. Soc. **34** (1997), 73–78.