

Curriculum Vitae

Daniel Ruberman, Professor of Mathematics

Academic Address

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Personal Information

Date of Birth: May 12, 1955

Citizenship: US

Education

1977 BA/MA, Wesleyan University
1982 Ph.D., University of California, Berkeley

Career

1982-84 Courant Instructor, Courant Institute, New York University
1984-85 Fellow, Mathematical Sciences Research Institute, Berkeley
1985-88 Assistant Professor, Brandeis University
1988-95 Associate Professor, Brandeis University
1991-92 Visiting Scholar, Harvard University
1994-95 Visiting Scholar, Mathematical Institute, Oxford
1995- Professor, Brandeis University
1998-2000 Chairman, Department of Mathematics, Brandeis University
2000-2001 Chercheur Invité, Université de Paris Sud, Orsay
2001 Member, Institut des Hautes Études Scientifiques, Bures-sur-Yvette

Honors and Grants

1985- NSF Research Grant in Topology
1987-90 NSF Mathematical Sciences Postdoctoral Research Fellow
1991-92 Sloan Foundation Fellow
1994-95 EPSRC Grant, supporting visit to Mathematical Institute, Oxford
2000-01 CNRS Grant, supporting visit to University of Paris, Orsay
2006-08 Slovenian/US Grant, supporting visit to University of Ljubljana, Slovenia

Professional Service

1995-2002 Associate Editor for Research Reports, Bulletin of the American
Mathematical Society
2005 Visiting Committee for Graduate Program in Mathematics, Northeastern University.
2004-2006 American Mathematical Society Centennial Fellowship Committee (Chair 2005-2006)
2006-2010 Editorial Board, Proceedings of the American Mathematical Society.
2006- Editorial Board, Gökova Geometry/Topology Journal.
2008 Co-organizer of conference, *Knot concordance: Fifty Years since Fox and Milnor*.

Publications

1. *Smooth surfaces with non-simply-connected complements* (with H.-J. Kim), Algebraic & Geometric Topology **8** (2008) 2263–2287. DOI: 10.2140/agt.2008.8.2263
2. *Knot concordance and Heegaard Floer homology invariants in branched covers* (with E. Grigsby and S. Strle). Geometry and Topology, **12** (2008), no. 4, 2249–2275. <http://www.arxiv.org/abs/math.GT/0701460>.
3. *Algebraic and Heegaard-Floer invariants of knots with slice Bing doubles* (with J. C. Cha and C. Livingston). Math. Proc. Camb. Phil. Soc., **144**, No. 2 (2008), 403–410. <http://www.arxiv.org/abs/math.GT/0612419>.
4. *Topological triviality of smoothly knotted surfaces in 4-manifolds* (with H.-J. Kim), Trans. Amer. Math. Soc., **360** (2008), no. 11, 5869–5881.
5. *Dirac operators on manifolds with periodic ends* (with N. Saveliev). Gökava Geometry and Topology Journal, **1** (2007). 33–50. <http://gokovagt.org/journal/2007/jggt07-rubesave.pdf>
6. *Rohlin’s invariant and gauge theory III. Homology 4–tori* (with N. Saveliev), Geometry and Topology, **9** (2005) Paper no. 47, pages 2079–2127.
7. *Casson–type invariants in dimension four* (with N. Saveliev), Proceedings of the Fields-McMaster Conference on Geometry and Topology of Manifolds. Fields Institute Communications **47** (2005), 281–306. <http://arxiv.org/abs/math.GT/0501090>
8. *Rohlin’s invariant and gauge theory, I: Homology 3–tori* (with N. Saveliev), Comm. Math. Helv., **9** (2004), no. 3, 618–646. <http://arxiv.org/math.GT/0302131>.
9. *Rohlin’s invariant and gauge theory, II: Mapping tori* (with N. Saveliev), Geometry and Topology, **8** (2004) Paper no. 2, pages 35–76.
10. *Isospectrality and 3-manifold groups*, Proc. Amer. Math. Soc. **129** (2001), 2467–2471.
11. *Positive scalar curvature, diffeomorphisms, and the Seiberg-Witten equations.*, Geometry and Topology, Vol. 5 (2001) Paper no. 28, pages 895–924.
12. *Mod 2 Seiberg-Witten invariants of homology tori*, (with Sašo Strle), Math Res. Lett., **7** (2000), no. 5–6, 789–799.
13. *Embedding tangles in links*, J. Knot Theory Ramif. **9** (2000), no. 4, 523–530.
14. *A polynomial invariant of diffeomorphisms of 4–manifolds*, Geometry and Topology Monographs **2** (1999), 473–487.
15. *Mutation and gauge theory. I. Yang-Mills invariants*, Comment. Math. Helv. **74** (1999), no. 4, 615–641.
16. *An obstruction to smooth isotopy in dimension 4*, Math. Res. Lett. **5** (1998), 743–758.
17. *A sextic surface cannot have 66 nodes* (with D. Jaffe), J. Alg. Geom. **6** (1997), 151–168.
18. *Null-homotopic embedded codimension-one spheres*, pages 229–232 in “Tight and taut submanifolds,” Cambridge Univ. Press, Cambridge (1997).
19. *A fake $\mathbf{CP}^2 \# \mathbf{RP}^4$* (with R. Stern), Math. Res. Lett. **4** (1997), 375–378.
20. *Relations among Donaldson invariants arising from negative 2-spheres and tori*, Duke Math. J. **83** (1996), 645–660.
21. *Configurations of 2-spheres in the K3 surface and other 4-manifolds*, Math. Proc. Camb. Phil. Soc. **120** (1996), 247–253.
22. *The minimal genus of an embedded surface of non-negative square in a rational surface*, Turkish J. Math. **20** (1996), 129–133.
23. *Involutions on spin 4-manifolds*, Proc. Amer. Math. Soc. **123** (1995) 593–597.
24. “The L^2 moduli space and a vanishing theorem for Donaldson’s Polynomial invariants” (with J. Morgan and T. Mrowka), Monographs in Geometry and Topology, International Press (1994).

25. *Splitting the spectral flow, and the Alexander matrix* (with P. Kirk and E. Klassen), *Comm. Math. Helv.* **69** (1994), 375-416.
26. *Smooth 2-spheres in homology K3 surfaces*, *Top. Appl.* **59** (1994), 1987-99.
27. *Homology and bounded homology of universal covers.* (Appendix to *Manifolds with wells of negative Ricci curvature*, by S. Rosenberg and K. D. Elworthy), *Invent. Math.* **103** (1991), 491-496.
28. *Cutting and pasting and the η -invariant* (with R. Meyerhoff), *Duke Math. J.* **61** (1990), 747-762.
29. *Mutation and the η -invariant* (with R. Meyerhoff), *J. Diff. Geom.* **31** (1990), 101-130.
30. *Seifert surfaces of knots in S^4* , *Pacific J. Math.* **145** (1990), 97-116.
31. *Invariants of tangles* (with T. Cochran), *Math. Proc. Camb. Phil. Soc.* **105** (1989), 299-306.
32. *Rational homology cobordisms of rational space forms*, *Topology* **27** (1988), 401-414.
33. *Imbeddings and homology cobordisms of lens spaces* (with S. Cappell) *Comm. Math. Helv.* **63** (1988), 75-89.
34. *The Casson-Gordon invariants in high-dimensional knot theory*, *Trans. Amer. Math. Soc.* **306** (1988), 579-595.
35. *Mutation and volumes of knots in S^3* , *Invent. Math.* **90** (1987), 189-215.
36. *Concordance of links in S^4* , *Contemporary Math.* **35** (Four Manifold theory) (1984), 481-483.
37. *Invariant Knots of free involutions of S^4* , *Top. Appl.* **18** (1984), 217-224.
38. *Doubly slice knots and the Casson-Gordon invariants*, *Trans. Amer. Math. Soc.* **279** (1983), 569-588.
39. *Imbedding punctured lens spaces and connected sums*, *Pacific J. Math.* **279** (1983), 569-588.
40. *Imbedding 4-manifolds and slicing links*, *Proc. Camb. Phil. Soc.* **91** (1982), 107-110.

Preprints

1. *Topologically slice knots with nontrivial Alexander polynomial* (with C. Livingston and M. Hedden). <http://arxiv.org/abs/1001.1538>, (2010).
2. *Seiberg-Witten equations, end-periodic Dirac operators, and a lift of Rohlin's invariant* (with T. Mrowka and N. Saveliev). <http://arxiv.org/abs/0905.4319>, (2009).
3. *The Seiberg-Witten invariants of manifolds with wells of negative curvature.* <http://www.arxiv.org/abs/math.GT/0205234>, (2002).

Recent Invited addresses.

Geometry seminar, Duke University, December 2009.
Colloquium, Wesleyan University, November 2009.
Colloquium, University of Miami, November 2009.
Harvard Gauge Theory and Topology seminar, March 2009.
Geometry and Analysis Seminar, Oxford, February 2009.
Transformation Groups in Topology and Geometry, Amherst, July 2008.
International Meeting on Spectral Geometry and Related Topics, Potsdam, May 2008.
Indiana University Topology Seminar (2 talks), April 2008.
Tufts Geometric Group Theory and Topology Seminar, March 2008.
Tufts Geometric Group Theory and Topology Seminar, October 2007.
Georgia Topology Conference, May 2007.
Tulane Conference in honor of Terry Lawson, New Orleans, April 2007.
Harvard Gauge Theory and Topology seminar, March 2007.
University of Ljubljana Topology Seminar, December 2006.
Texas Geometry and Topology Conference, Houston, October 2006.
AMS Special Session on Invariants of Low-Dimensional Manifolds, Miami, April 2006.
Colloquium, Rice University, October 2005.
Holomorphic Curves workshop, Institute for Advanced Studies, June 2005.
Topology seminar, University of California, Berkeley, March 2005.
University of Virginia Topology Conference, December 2004.
McMaster Conference on Geometry and Topology, May 2004.
Dartmouth College Colloquium, March 2004.
BIRS Conference on Topology in and around dimension 3, Banff, October 2003.
AMS Special Session on Geometric Topology, Bloomington, April 2003.
Harvard Gauge Theory and Topology seminar, November 2002.
Ontario Topology Conference, October 2002.
19th William J. Spencer Lecture, Kansas State University, May 2002.
Conference on Holomorphic Curves and Low-dimensional Topology, Institute for Advanced Studies, March 2002.
Harvard Gauge Theory and Topology seminar, October 2001.
Conference on Group Actions and Low-dimensional Topology, CRM, Montreal, August 2001.
Séminaire Arthur Besse, École Polytechnique, Palaiseau, June 2001.
Trinity College gauge theory seminar, Dublin, May 2001.
University of Paris 6 Topology seminar, Paris, March 2001.