

Thomas G. Leness

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Birth: New York City. May 6th, 1967.

Citizenship: United States

Education:

Ph.D. and M. Phil., Columbia University, in Mathematics, June 1994.
Thesis Advisor: Professor John W. Morgan
M.A., Columbia University, in Mathematics, June 1990.
B.A., Harvard University, June 1989, Cum Laude in Mathematics.

Research interests:

Applications of gauge theory to the smooth topology of low-dimensional manifolds.
Differential geometry, topology, and geometric analysis.

Permanent Employment:

Associate Professor, Florida International University, Fall '02-present.
Assistant Professor, Florida International University, Fall '97-Fall '02.
Visiting Research Instructor, Michigan State University, Fall '94 -Spring '97.

Visiting positions:

Visiting scholar, University of Pennsylvania, September-December 2005.
Visiting lecturer, Trinity College, Ireland, January-June 2001.
Visitor, Max-Planck-Institut für Mathematik, June-July 2000.

Grants and honors:

National Science Foundation grant, DMS 0905786, 08/09-08/12.
FIU Mathematics Department Summer Research Grant, 8/09.
FIU Foundation Research Grant, 7/07-9/07.
Summer Research Grant, Florida International University, 7/06-8/06.
National Science Foundation grant, DMS 0103677, 10/01-10/04.
Provost's Summer Research Grant, Florida International University, 6/01-8/01.
The article PU(2) *monopoles and links of top-level Seiberg-Witten moduli spaces* was the subject of a featured review in Math Reviews, 2002f:57068.
The article PU(2) *monopoles, I: Regularity, Transversality, and Compactness* was the subject of a featured review in Math Reviews, 2000e:57052.

Publications:

- (1) T. Leness, *The semi-algebraicity of the Uhlenbeck compactification of S^4 instanton moduli spaces*, *Differential Geometry and Its Applications*, Vol. 26, No. 1, 2008, p. 52-62.
- (2) P. Feehan and T. Leness, *SO(3)-monopoles: The overlap problem*, in *Geometry and Topology of Manifolds*, Fields Institute Communications, 47, AMS, 2005, p. 97-118.

- (3) P. Feehan and T. Leness, *On Donaldson and Seiberg-Witten invariants*, in *Topology and geometry of manifolds (Athens, GA, 2001)*, Proceedings of Symposia in Pure Mathematics, Vol. 71, 2003, p. 237-248.
- (4) P. Feehan and T. Leness, *Links of level one reducible PU(2) monopoles*, *Topology and Its Applications*, Vol. 124, No. 2, 2002, p. 221-326.
- (5) P. Feehan and T. Leness, *PU(2) monopoles and links of top-level Seiberg-Witten moduli spaces*, *Journal für die reine und angewandte Mathematik*, Vol. 538, 2001, p. 57-133.
- (6) P. Feehan and T. Leness, *PU(2) monopoles, II: Top-level Seiberg-Witten moduli spaces and a special case of Witten's conjecture*, *Journal für die reine und angewandte Mathematik*, Vol. 538, 2001, p. 135-212.
- (7) P. Feehan, P. Kronheimer, T. Leness, and T. Mrowka, *PU(2) monopoles and a conjecture of Marino, Moore, and Peradze*, *Mathematical Research Letters* **6** No. 2, 1999 p. 169-182.
- (8) T. Leness, *Wall-crossing formula for Donaldson invariants via topology*, *Forum Mathematica* **11** No. 4, 1999 p. 417-455.
- (9) P. Feehan and T. Leness, *PU(2) monopoles, I: Regularity, Transversality, and Compactness*, *Journal of Differential Geometry* **49** 1998, p. 265-410.
- (10) T. Leness, *Blow-up formulae for SO(3)-Donaldson polynomials*, *Mathematische Zeitschrift* **227**, 1-26 (1998).
- (11) P. Feehan and T. Leness, *PU(2) monopoles and relations between four-manifold invariants*, *Topology and Its Applications* **20** (1997) p. 1-35.

Works in progress and under review:

- (1) T. Leness *Degeneracy loci of families of Dirac operators*, submitted, 14 pages.
- (2) P. Feehan and T. Leness, *Witten's conjecture for four-manifolds of simple type*, manuscript in progress, math.DG0609530, 17 pages.
- (3) P. Feehan and T. Leness, *A general SO(3)-monopole cobordism formula relating Donaldson and Seiberg-Witten invariants*, available at <http://www.fiu.edu/~lenesst/>, 199 pages, submitted.
- (4) P. Feehan and T. Leness, *PU(2) monopoles. III: Existence of gluing and obstruction maps*, pre-print, math.DG/9907107, 92 pages.
- (5) P. Feehan and T. Leness, *Donaldson invariants and wall-crossing formulas. I: Continuity of gluing maps*, pre-print, math.dg-ga/9712005, 86 pages.

International lectures:

Conference on Geometry and Topology of Manifolds, McMaster University (Hamilton, Ontario), May '04.

Topology seminar, McMaster University (Hamilton, Ontario), February '02.

Geometry and topology conference, Warwick University (England), July '00.

Summer geometry conference, Seoul National University, July '97.

Colloquium lecture, University of British Columbia, March '97.

Domestic lectures:

Colloquium lecture, Binghamton University, March '02.

Georgia Topology Conference, May '99.

Gauge theory conference, M.S.R.I., Jan. '97.

Seminar talks:

Four-manifolds seminar, Park City Summer School, July '06.

Topology seminar, University of Pennsylvania, Nov. '05.
 Geometry seminar, University of Miami, April '03.
 Geometry seminar, Florida International Univ., November '02.
 Topology seminar, McMaster University, Canada, February '02.
 Geometry seminar, Trinity College, Ireland, January '01.
 Geometry and topology seminar, Florida International Univ., October 13th, 20th, '00.
 Gauge theory seminar, Max-Planck-Institut für Mathematik, July '00.
 Geometry seminar, University of Miami, Oct. '98.
 Geometry and analysis seminar, Florida International Univ., April '97, Nov. '98.
 Undergraduate math club, Florida International Univ., Nov. '98.
 Geometry seminar, Ohio State University, October '97.
 Gauge theory seminar, Michigan State University, Feb. '95, Oct. '95, Oct. '96.
 Gauge theory seminar, Harvard University, Oct. '95.
 Gauge theory seminar, Columbia University, March '93.

AMS Special Session Talks:

Baton Rouge, Louisiana, March '08.
 Lawrenceville, New Jersey, Oct. '96.
 Columbia, Missouri, Nov. '96.
 Boston, Massachusetts, Oct. '95.

Professional activities:

Co-organized AMS special session at April '06 meeting, Miami, FL.
 Reviewer for the National Science Foundation, Division of Mathematical Sciences.
 Referee for GAFA, American Journal of Mathematics, Journal of Differential Geometry, Forum Mathematicum, Transactions of the American Mathematical Society.

Departmental service:

Ph.D. program proposal committee, Sept. '02 to present.
 Graduate committee, Sept. '03-present.
 Graduate faculty selection committee for Mathematics Department, Spring '03.
 Hiring committee, June '01-Aug. '03.
 Organizing secretary for geometry and topology seminar, Aug. '00 -present.
 Graduate committee, Aug. '98' -Jan. '01.
 Ph.D. program curriculum committee, May '00-Aug.'00.
 Graduate student representative, Columbia University, May '93-May '94.
 Course co-ordinator for Topology and College Geometry courses, Aug. '98-present.

University service:

Referee for FIU Faculty Development Grants, '05.
 Referee for FIU Summer research proposals, '04.
 Graduate faculty selection committee for Statistics Department, April '03.
 Graduate faculty selection committee for Mathematics Department, Sept. '03.