Mark Brittenham

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Date of birth: April 30, 1961
Place of birth: Milwaukee, Wisconsin

Education

May 1990: Ph.D., Cornell University
Dissertation: Essential Laminations in Seifert-fibered Spaces
Advisor: Allen Hatcher

January 1986: M.A., Cornell University

January 1983: B.S., SUNY at Stony Brook (with highest honors)

Research Interests

Geometric topology; low-dimensional topology; knot theory; foliations and laminations in 3-manifolds; geometric group theory

Teaching/Research Experience

2000-present: Assistant Professor, University of Nebraska - Lincoln
Courses taught: multivariable calculus

1999-2000: Visiting Assistant Professor, University of Nebraska - Lincoln
Courses taught: contemporary math, matrix theory
multivariate calculus, algebraic topology, differential equations

1997-present: Assistant Professor, University of North Texas
Courses taught: precalculus, calculus I/II, topology

1996-1997: Visiting Assistant Professor, Vassar College
Courses taught: calculus and discrete mathematics,
multivariate calculus, excursions in mathematics

August, 1996: member, Mathematical Sciences Research Institute

1995 - 1996: Visiting Assistant Professor, New Mexico State University
Courses taught: calculus, vector calculus, differential
equations, real analysis

1994 - 1995: Postdoctoral Fellow, University of Texas at Austin

1991 - 1994: Instructor, University of Texas at Austin
Graduate courses taught: foliations of 3-manifolds
Undergraduate courses taught: calculus, linear algebra, topology, abstract algebra, real analysis

Other activities:

1993-1994: Co-organizer, Introduction to Research lecture series

1990-1991: Member, Institute for Advanced Study, Princeton, NJ

Fall 1989, Fall 1988: Lecturer, Cornell University
Courses taught: calculus I

Fellowships/Awards/Grants

1998-1999: Faculty Research Grant
University of North Texas

1998: Junior Faculty Summer Research Fellowship
University of North Texas

1997-2000: NSF grant no. DMS-9704811 (3 years)
Project title: 'Essential laminations in 3-manifolds'

1994-1997: NSF grant no. DMS-9400651 (3 years)
Project title: 'Essential laminations in 3-manifolds'

1992-1994: NSF grant no. DMS-9203435 (2 years)
Project title: 'Essential laminations in 3-manifolds'

1987-1988: Alfred P. Sloan Dissertation Fellowship

Spr. 1989, Spr. 1987, Spr. 1985: Hutchinson Fellowship

1983-1984: Sage Graduate Fellowship

May 1983: Stony Brook Foundation Award

Invited Talks

1. Upstate New York Topology Seminar, Syracuse, NY, November 10-12, 1989
   Title: Seifert-fibered spaces which contain no essential laminations.

2. Saint Louis University, St. Louis, MO, colloquium, February 21, 1990
   Title: Essential laminations in Seifert-fibered spaces.

3. Georgia Topology Conference, Athens, GA, August 1-5, 1990
   Title: Essential laminations in Seifert-fibered spaces.

4. Rutgers University, Newark, NJ, topology seminar, February 28, 1991
   Title: Haken normal form for essential laminations.

5. Low-dimensional Topology Conference, Knoxville, TN, May 18-23, 1992
   Title: Controlling essential laminations.

6. Texas Geometry/Topology Conference, Houston, TX, April 16-18,1993
   Title: Essential laminations in non-Haken 3-manifolds.

7. Joint AMS - SMM meeting, Merida, Yucatan, Mexico, December 1-4, 1993
   Special session on geometric topology in low dimensions
   Title: Essential laminations and cylindrical components.

8. New Mexico State University, Las Cruces, NM, colloquium, December 1, 1994
   Title: Exploring 2-bridge knots.

9. New Mexico Topology/Geometry Seminar, Albuquerque, NM, October 27-28, 1995
   Title: Knots, Property P, and essential laminations.

10. Cascade Topology Seminar, Tacoma, WA, November 4-5, 1995
    Title: Persistent laminations from Seifert surfaces, or How to build your very own knot with (strong) Property P.

11. Joint AMS - SMM meeting, Guanajuato, Mexico, Nov. 29 - Dec. 2, 1995
    Special session on low dimensional topology
    Title: (Exceptional) Seifert-fibered spaces and Dehn surgery on hyperbolic knots.

12. University of Texas at El Paso, El Paso, TX, February 16, 1996
    Undergraduate Mathematics Club
    Title: Knots and surfaces.
    Departmental Colloquium
    Title: The care and feeding of essential laminations in 3-manifolds.

13. AMS Meeting, University of Iowa, Iowa City, IA, March 22-23, 1996
    Special session on Topology of 3-manifolds
    Title: Graph manifolds and taut foliations.

14. Cornell University, Ithaca, NY, topology seminar, November 26, 1996
    Title: Essential laminations are everywhere.

15. Univ. de Quebec á Montreal, topology seminar, March 21, 1997
    Title: Essential laminations as hyperbolic 3-manifold detectors.

16. Colloquium of Quebec Graduate Students, Univ. de Montreal, March 22-23, 1997
    Plenary lecture
    Title: Foliations from the topological point of view.

17. Catskill-Taconic Topology Day, Vassar College, May 10, 1997
    Title: A laminator's 'most-wanted' list of knots.

18. Georgia Topology Conference, Athens, GA, July 30 - August 3, 1997
    Title: Constructing persistent laminations for fun and profit.

19. New Mexico State University, Friday seminar, October 3, 1997
    Title: Playing checkers with knots.

20. University of Texas at Austin, topology seminar, November 24, 1997
    Title: When incompressible tori meet essential laminations.

21. Nara Women's University, Nara, Japan, January 5-8, 1998
    Meeting on laminations in 3-manifolds
    Title: When incompressible tori meet essential laminations.

22. AMS meeting, Kansas State University, March 27-28. 1998
    Special session on Pictorial Methods in Low Dimensional Topology
    Title: Canonical genus, free genus, and volume.

23. AMS meeting, Univ. of California at Davis, April 25-26, 1998
    Special session on Recent Results on the Topology of Three-Manifolds
    Title: Canonical genus, free genus, and volume.

24. AMS meeting, Wake Forest Univ., Winston-Salem, NC, October 9-10, 1998
    Special session on Geometry and Topology in dimension 3
    Title: Free Seifert surfaces for knots.

25. Rice University, Houston, TX, colloquium, November 5, 1998
    Title: Knots, Seifert surfaces, and volume.

26. Texas A & M Commerce, Commerce, TX
    student/faculty colloquium, November 17, 1998
    Title: Knots, Seifert surfaces, and volume.

27. Regional Workshop in Mathematics, Univ. of Nebraska - Lincoln, Feb. 26-27, 1999
    session on geometric group theory
    Title: Building checkerboards for knots.

28. AMS meeting, Univ. of Texas at Austin, October 8-10, 1999
    Special session on Dehn surgery and Kleinian groups.
    Title: Free Seifert surfaces and disk decompositions.

29. University of Nebraska, colloquium, October 14, 1999
    Title: Tying surfaces up in knots.

30. University of Iowa, topology seminar, November 18, 1999
    Title: Seifert surfaces, Seifert's algorithm, and disk decompositions.

31. Regional Workshop in Mathematics, Univ. of Nebr. - Lincoln, November 19-20, 1999
    session on groups and semigroups
    Title: Knots and crayons.

32. Texas Christian University, Frank W. Stones Lectureship Series, November 23, 1999
    Title: The best surface(s) for studying a knot.

33. SUNY at Buffalo, colloquium, December 10, 1999
    Title: Tying surfaces up in knots

34. University of South Alabama, colloquium, February 18, 2000
    Title: Tying surfaces up in knots

35. AMS meeting, Univ. of California at Santa Barbara, March 11-12, 2000
    Special session on Geometric Methods in 3-manifolds
    Title: Seifert surfaces and sutured handlebodies

36. University of Michigan, topology seminar, March 14, 2000
    title: The search for a hyperbolic, non-laminar, 3-manifold

37. Conference on Foliations: Geometry and Dynamics, Banach Center, Warsaw, Poland, May 29-June 9, 2000
    Title: Sutured handlebodies and depth of knots

38. "It's a Math Thing", University of Nebraska - Lincoln, July 21-22,2000
    Title: Building rectangles out of squares of different sizes (2 talks)

Papers and Preprints

1. *Essential laminations in Seifert-fibered spaces*, Topology **32** no.1 (1993), 61-85.
2. *Essential laminations in non-Haken 3-manifolds*, Topology Appl. **53** (1993) 317-324.
3. *Essential laminations and deformations of homotopy equivalences : From essential pullback to homeomorphism*, Topology Appl. **60** (1994) 249-265.
4. *Essential laminations and Haken normal form*, Pacific J. Math **168** (1995), 217-234.
5. *Essential laminations and Haken normal form : Laminations with no holonomy*, Comm. Anal. Geom. **3** (1995) 465-477.
6. *Essential laminations in* I*-bundles*, Trans. AMS **349** (1997) 1463-1485.
7. *Exceptional Seifert-fibered spaces and Dehn surgery on 2-bridge knots*, Topology **37** (1998) 665-672.
8. π_1*-injective, proper maps of open surfaces*, preprint (1989).
9. *Essential laminations and Haken normal form : Regular cell decompositions*, preprint (1992).

10. *Essential laminations and deformations of homotopy equivalences : The structure of pullbacks*, preprint (1994).
11. *Essential laminations in Seifert-fibered spaces : Boundary behavior*, Topology Appl. **95** (1999) 47-62.
12. (with Y.-Q. Wu) *The classification of Dehn surgeries on 2-bridge knots*, to appear in Comm. Anal. Geom.
13. (with R. Naimi and R. Roberts) *Graph manifolds and taut foliations*, J. Diff. Geom. **45** (1997) 446-470.
14. *Essential laminations, exceptional Seifert-fibered spaces, and Dehn filling*, J. Knot Thy. Ram. **7** (1998) 425-432.
15. *Persistently laminar tangles*, J. Knot Thy. Ram. **8** (1999) 415-428.
16. *Persistent laminations from Seifert surfaces*, submitted for publication.
17. (with R. Roberts) *When incompressible tori meet essential laminations*, Pacific J. Math. **190** (1999) 21-40.
18. *Bounding canonical genus bounds volume*, submitted for publication.
19. *Free genus one knots with large volume*, to appear in Pacific J. Math.
20. *Free Seifert surfaces and disk decompositions*, preprint (1999).
21. (with C. Hayashi, M. Hirasawa, T. Kobayashi, and K. Shimokawa) *Essential laminations and branched surfaces in the exteriors of links*, preprint (1999).
22. *Tautly foliated manifolds without* $\mathbf{R}$*-covered foliations*, in preparation.
23. *Depths of minimal free Seifert surfaces*, in preparation.
24. (with J. Dean) *A knot with Strong Property P but no persistent lamination*, in preparation.
25. *Foliations and the topology of 3-manifolds*, draft of a manuscript based on lectures at the University of Texas at Austin, spring 1993.

Other Activities

Reviewer for the National Science Foundation

Reviewer for Addison Wesley Longman Publishing

Reviewer for Brooks/Cole Publishing

Referee for Advances in Mathematics

Referee for Communications in Analysis and Geometry

Referee for the Journal of Knot Theory and its Ramifications

Referee for the Pacific Journal of Mathematics

Referee for the Proceedings of the American Mathematical Society

Referee for the Rocky Mountain Journal of Mathematics

Referee for the Transactions of the American Mathematical Society

Referee for the Proceedings of the 1993 Georgia Topology Conference

Referee for the Proceedings of the Kirbyfest, MSRI, June, 1998

Reviewer for Mathematical Reviews

Co-organizer (with C. Delman and R. Roberts), special session on Low-dimensional Topology, AMS meeting, Urbana, IL, March 18-21, 1999.

Co-organizer (with F. Gonzalez-Acuña and L. Sanchez-Valdez), special session on Low-dimensional Topology, AMS-SMM meeting, Denton, TX, May 19-22, 1999.

Co-organizer, Third Annual Regional Workshop in the Mathematical Sciences, University of Nebraska - Lincoln, October 27-28, 2000