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Department of Mathematics
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Email: broaddus@math.ohio-state.edu**Web:** www.math.ohio-state.edu/~broaddus**Tel:** +1 614 292 0605**Fax:** +1 614 292 1479**Skype name:** nate.broaddus**Education and Employment**

Assistant Professor - Ohio State University, 2009-Present
NSF Postdoc/L.E. Dickson Instructor - University of Chicago, 2005-2009
NSF Postdoc/VIGRE Postdoc/H.C. Wang Asst. Professor - Cornell University, 2003-2005
Ph.D. Math - Columbia University, 1997-2003
B.S. Math - University of Chicago, 1993-1997

Thesis Advisor

Joan S. Birman, Columbia University

Grant Activities

Awarded 2010 NSF Program Description PD 04-1267 - Topology

Title: The mapping class group and its finitely generated subgroups

Dates: 7/15/2010-7/14/2013

Grant Number: DMS-1007059

Amount: \$118,739.00

NSF Mathematical Sciences Postdoctoral Research Fellowship

Dates: 9/25/2003-8/31/2006

Grant Number: DMS-0303436

Amount: \$108,000.00

Papers and Preprints

- [1] N. Broaddus, Noncyclic covers of knot complements, *Geom. Dedicata* **111** (2005), 211–239. MR2155182
- [2] J. S. Birman, T. E. Brendle and N. Broaddus, Calculating the image of the second Johnson-Morita representation, in *Groups of diffeomorphisms*, 119–134, *Adv. Stud. Pure Math.*, 52, Math. Soc. Japan, Tokyo. (2008) MR2509709
- [3] N. Broaddus, B. Farb and A. Putman, The Casson invariant and the word metric on the Torelli group, *C. R. Math. Acad. Sci. Paris* **345** (2007), no. 8, 449–452. MR2367364
- [4] N. Broaddus, B. Farb and A. Putman, Irreducible Sp-representations and subgroup distortion in the mapping class group, (*To appear in Comment. Math. Helv.*)
- [5] N. Broaddus, Homology of the curve complex and the Steinberg module of the mapping class group, (*submitted for publication.*)

Talks

The mapping class group and its finitely generated subgroups

Ohio State University Invitation to Mathematics Seminar, February 1 & 8, 2009

Homology of the curve complex and the Steinberg module of the mapping class group

Princeton University Topology Seminar, October 7, 2010
University of Illinois at Chicago Geometry/Topology/Dynamics Seminar, March 9, 2009
Loyola University New Orleans Colloquium, February, 2009
Temple University Colloquium, February 11, 2009
Ohio State University Colloquium, February 5, 2009
University of Dayton Colloquium, January 29, 2009
Oklahoma State University Colloquium, January 22, 2009
Midwest Topology Seminar at Northwestern University, May 3, 2008
University of Chicago Geometry/Topology Seminar, January 10, 2008
Michigan State University Geometry/Topology Seminar, December 5, 2007

The Casson invariant and the word metric on the Torelli group

Spring AMS Special Session on Hyperbolic Geometry and Teichmüller Theory, March 27, 2009
Spring AMS Southeastern Meeting Special Session on Geometric Group Theory, March 30, 2008

Irreducible Sp-representations and distortion in the mapping class group

Ohio State University Geometric Group Theory Seminar, October 15, 2009
Summer Wasatch Topology Conference at the University of Utah, August 13, 2007
University of Chicago Geometry/Topology Seminar, August 3, 2007

Heegaard splittings and 3-manifold invariants from the Johnson-Morita homomorphisms

Joint AMS-MAA Meeting in New Orleans Special Session, January 8, 2007
Columbia University Topology Seminar, March 10, 2006
Ohio State University Topology Seminar, January 31, 2006
University of Chicago Geometry/Topology Seminar, November 22, 2005

Noncyclic covers of knot complements

Louisiana State University Topology Seminar, September 6, 2005
1001st AMS Meeting at Northwestern University, October 24, 2004
1000th AMS Meeting at the University of New Mexico, October 16, 2004
University of Illinois at Chicago Topology Seminar, March 12, 2004
University of Chicago Geometry/Topology Seminar, March 10, 2004
Buffalo University Topology Seminar, February 13, 2004
McMaster University Geometry & Topology Seminar, October 27, 2003
Binghamton University Geometry Topology Seminar, October 2, 2003
Cornell University Topology/Geometric Group Theory Seminar, September 9, 2003
986th AMS Meeting at the Courant Institute, Special Session, April 13th, 2003
Columbia University Geometric Topology Seminar, May 9, 2003

Teaching

Ohio State University

Algebraic Topology (Math 756 **graduate course**)—*Fall 2010*
 Honors Calculus (Math 161.01)—*Fall 2010*
 Calculus and Analytic Geometry II (Math 152.02)—*Winter 2010*
 Calculus and Analytic Geometry I (Math 151.02)—*Fall 2009*

University of Chicago

Honors calculus I—*Fall 2006, Fall 2007, Fall 2008*
 Honors calculus II—*Winter 2008*
 Honors calculus III—*Spring 2008, Spring 2009*
 Homology of the mapping class group (**graduate course**)—*Spring 2007*
 Introduction to algebraic topology—*Spring 2007*
 Directed reading program—*Winter 2007*
 Intro to analysis and linear algebra—*Fall 2006, Fall 2007*

Cornell University

Foliations (**graduate course**)—*Fall 2004*
 Calculus for engineers—*Fall 2003*

Columbia University

Undergraduate seminar on Coxeter groups–*Spring 2003*
Undergraduate seminar on combinatorics–*Fall 2002*
Ordinary differential equations–*Summer 2002*
Undergraduate seminar on logic–*Fall 2001*
Calculus IIA–*Spring 2000, Summer 2000, Summer 2001*
Calculus IA–*Fall 1999*
Calculus for the social sciences II–*Summer 1999*

Professional Service

Co-organizer for The Ohio State University Topology Seminar 2009-Present
Co-organizer for The University of Chicago Geometry/Topology Seminar 2005-2009
Referee for Proceedings of Groups of Diffeomorphisms 2006

Conference Participation

- Vogtmannfest, in Luminy, France, June 21-25, 2010
- 2009 Spring Central Sectional Meeting “Hyperbolic Geometry and Teichmüller Theory”, in Urbana, IL, March 27-29, 2009
- American Institute of Mathematics workshop, “The Isoperimetric Inequality for $SL(n, \mathbb{Z})$ ”, (**Co-organizer**) September 8-12, 2008
- 2008 Spring AMS Southeastern Meeting Special Session “Geometric Group Theory”, in Baton Rouge, LA, March 28-30, 2008
- Topics in Geometric Group Theory at MSRI, November 5-9, 2007
- Joint AMS-MAA Meeting in New Orleans Special Session “Mapping class groups and handlebodies”, January 8, 2007
- International Congress of Mathematicians 2006, Madrid, August 22-30, 2006
- Winter 2005 Wasatch Topology Conference (Park City, Utah), December 14-16, 2005
- Cornell Topology Festival (**Co-organizer**), May 6-9, 2005
- Conference on Braids, Links, and Mapping Class Groups in Honor of Joan Birman (Columbia U.) March 17-20, 2005
- Cornell Topology Festival (**Co-organizer**), May 7-10, 2004
- Albany Group Theory Conference, October 17-19, 2003
- Cornell Topology Festival, May 1-4, 2003
- Workshop on Groups and 3-manifolds at CRM, June 25-29, 2001
- AMS Mathematical Challenges of the 21st Century at UCLA, August 7-12, 2000
- Knots 2000 at the Korea Advanced Institute of Science and Technology, July 31-August 5, 2000

References

Joan Birman, Columbia University, jb@math.columbia.edu
Benson Farb, University of Chicago, farb@math.uchicago.edu
Karen Vogtmann, Cornell University, vogtmann@math.cornell.edu
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