

Matthew B. Day

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University of Arkansas
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Date of birth: May 17th, 1981

Citizenship: U.S.A.

Research interests: geometric group theory, combinatorial group theory, low dimensional topology, mapping class groups, right-angled Artin groups, automorphism groups of groups

Employment:

2011–present **The University of Arkansas**, Fayetteville, AR
Department of Mathematical Sciences
Assistant Professor (2011–2016),
Associate Professor (2016–present)

2008–2011 **The California Institute of Technology**, Pasadena, CA
Department of Mathematics
National Science Foundation Postdoctoral Scholar (2008–2011)
Taussky-Todd Instructor (2010–2011)

Education:

2002–2008 **The University of Chicago**, Chicago, IL
Ph.D. in Mathematics, June 2008 (Advisor: Benson Farb)
M.S. in Mathematics, August 2004

1998–2002 **The University of Texas at Austin**, Austin, TX
B.S. in Mathematics, B.A. double major in Linguistics and Philosophy,
May 2002, with highest honors

Teaching (continues on page 2):

2011–present The University of Arkansas:

2018–2019	MATH 5703/5713	Graduate Topology I/II
Fall 2018	MATH 2754	Calculus III
Spring 2018	MATH/STAT 3013	Introduction to Probability
Fall 2017	MATH 679V	Topics course: Automorphism groups
Spring 2016	MATH 3093	Abstract Linear Algebra
Spring 2016	MATH 2083	Introduction to Proof
Spring 2015, Spring 2017	MATH 4113	Introduction to Abstract Algebra II
F.'14, F.'15, S.'15, S.'17, S.'19	MATH 3113	Introduction to Abstract Algebra I

Teaching, continued:

2011–present The University of Arkansas, continued:

Fall 2014	MATH 499V	Topics course: Representation Theory
F.'13, F. '15, F.'16, F.'19, S.'20	MATH 3083	Linear Algebra
Fall 2012	MATH 2584	Differential Equations/Laplace Transform
'12-'13, '17-'18, '19-'20	MATH 5123/5133	Graduate Algebra I/II
2011–2012, 2013–2014	MATH 5703/5713	Graduate Differential Topology I/II
Fall 2011	MATH 2654	Calculus II

2010–2011 The California Institute of Technology:

Fall 2010	Math 109a	Introduction to geometry and topology I
Winter 2011	Math 191a	Automorphism groups of free groups
Spring 2011	Math 109c	Introduction to geometry and topology III

2002–2008 The University of Chicago:

2007–2008	Math 152/3	Calculus II/III (Instructor)
2004–2005	Math 131/2/3	Elem. Functions and Calc. I/II/III (Instructor)
2003–2004	Math 203/4/5	Analysis in \mathbb{R}^n (Teaching Assistant)

Research preprints:

1. *Calculating the virtual cohomological dimension of the automorphism group of a RAAG*, joint with Richard D. Wade and Andrew W. Sale, 2019 ArXiv preprint, <https://arxiv.org/abs/1909.03086> . 14 pages.

Research papers in refereed journals (continues on page 3):

1. *Relative automorphism groups of right-angled Artin groups*, joint with Richard D. Wade, *Journal of Topology*, 12 (3), 2019, 759-798.
2. *On the second homology group of the Torelli subgroup of $\text{Aut}(F_n)$* , joint with Andrew Putman, *Geometry & Topology* 21-5 (2017), 2851-2896.
3. *A Birman exact sequence for the Torelli subgroup of $\text{Aut}(F_n)$* , joint with Andrew Putman, *International Journal of Algebra and Computation* 26, 03 (2016), 585-617.
4. *Subspace arrangements, BNS invariants, and pure symmetric outer automorphisms of right-angled Artin groups*, joint with Richard D. Wade, *Groups, Geometry and Dynamics* 12 (2018), no. 1, 173–206 .
5. *Full-featured peak reduction in right-angled Artin groups*, *Algebraic & Geometric Topology* 14 (2014), pp 1677-1743.
6. *A Birman exact sequence for $\text{Aut}(F_n)$* , with Andrew Putman, *Advances in Mathematics* 231 (1), 2012, pp 243-275.
7. *The complex of partial bases for F_n and finite generation of the Torelli subgroup of $\text{Aut}(F_n)$* , with Andrew Putman, *Geometriae Dedicata* 164 (1), 2013, pp 139-153.
8. *Finiteness of outer automorphism groups of random right-angled Artin groups*, *Algebraic & Geometric Topology* 12, 2012, pp 1553–1583.
9. *On solvable subgroups of automorphism groups of right-angled Artin groups*, *International Journal of Algebra and Computation* 21 (61), 2011, pp 61-70.

Research papers in refereed journals, continued:

10. *Extensions of Johnson's and Morita's homomorphisms that map to finitely generated abelian groups*, Journal of Topology and Analysis 5 (1), 2013, pp 57-85.
11. *Extended flux maps on surfaces and the contracted Johnson homomorphism*, Journal of Symplectic Geometry 9 (4), 2011, pp 445-482.
12. *Symplectic structures on right-angled Artin groups: Between the mapping class group and the symplectic group*, Geometry & Topology 13, 2009, pp 857-899.
13. *Peak reduction and finite presentations for automorphism groups of right-angled Artin groups*, Geometry & Topology 13, 2009, pp 817-855.
14. *Extending Johnson's and Morita's homomorphisms to the mapping class group*, Algebraic & Geometric Topology 7, 2007, pp 1297-1326.

Fellowships and Grants:

- 2015-2016 National Science Foundation conference grant for Arkansas SLS conference
- 2012-2015 National Science Foundation standard grant DMS-1206981
- 2008-2010 National Science Foundation Mathematical Sciences Postdoctoral Research Fellowship
- 2002-2007 National Science Foundation Graduate Research Fellowship

Professional Service:

- Principal organizer for 2015 Arkansas Spring Lecture Series conference.
- Co-organizer of *Redbud topology conference*, regional topology conference series for AR/OK, 2011-present.
- Co-organizer of special session *Geometric group theory and dynamics*, in the 2011 spring western sectional meeting of the AMS.
- Co-organizer of special session *Topics in geometric group theory*, in the 2010 spring western sectional meeting of the AMS.
- Reviewer for Mathematical Reviews/MathSciNet, 2009-present.
- Referee for Algebraic & Geometric Topology, Geometry & Topology, Transactions of the American Mathematical Society, Communications in Algebra, Journal of the London Mathematical Society, Journal of Pure and Applied Algebra, New York Journal of Mathematics, the Journal of Topology, Proceedings of the AMS, the International Journal of Algebra and Combinatorics, the Journal of Algebraic Combinatorics, "Groups, Complexity, Cryptology",

University Service:

- University of Arkansas, Mathematical Sciences Hiring Committee, 2011-2012
- University of Arkansas, Mathematical Sciences Graduate Committee, 2012-2015
- University of Arkansas, Mathematical Sciences Undergraduate Committee, 2016-present.
- University of Arkansas, Mathematical Sciences third-year review committee, 2017-2018.
- Course development: graduate topology sequence at the University of Arkansas, 2011-2012.

Selected Talks:

- *Calculating the virtual cohomological dimension of the automorphism group of a right-angled Artin group*, University of Virginia Algebra Seminar, October 2019.
- *Relative outer automorphisms of RAAGs and restriction maps*, invited talk, Geometry of Outer Spaces and Outer Automorphism Groups Workshop, the University of Warwick, April 2018.

Selected Talks continue on page 4.

Selected Talks, continued:

- *Basis conjugating outer automorphisms of RAAGs*, invited talk, Effective and Algorithmic Methods in Hyperbolic Geometry and Free Groups Workshop, ICERM, Brown University, May 2016.
- *Link splitting complexes and right-angled Artin groups*, invited talk, University of Chicago Topology Seminar, April 2016
- *Link splitting complexes and right-angled Artin groups*, semi-plenary talk, Spring Topology and Dynamics conference, Baylor University, March 2016
- *The geometry of mapping class groups and $Out(F_n)$* , mini-course, Geometric Group Theory Summer School, MSRI, June 2015
- *On the second homology group of the Torelli subgroup of $Aut(F_n)$* , Stanford University Topology Seminar, February 2015
- *On the second homology group of the Torelli subgroup of $Aut(F_n)$* , Redbud Topology Conference, University of Arkansas, November 2014
- *An infinite presentation for the Torelli subgroup IA_n of the automorphism group of a free group*, Columbia University Topology Seminar, April 2014
- *Row reduction and partially commutative groups*, Northern Illinois University Mathematics Colloquium April 2014
- *Automorphism orbit membership for right-angled Artin groups*, at *Geometric and Asymptotic Group theory with Applications 7*, City College of New York, May 2013.
- *Automorphism group orbits of sets of conjugacy classes in right-angled Artin groups*, at the *2nd Fall Redbud Topology Conference*, University of Oklahoma, November 2012.
- *Relations in the Torelli subgroup of $Aut(F_n)$* , at the AMS Spring Western Sectional Meeting, special session *Asymptotic Group Theory*, March 2012.
- *A Birman exact sequence for $Aut(F_n)$* , at the AMS Fall Central Sectional Meeting, special session *Algorithmic and Geometric Properties of Groups and Semigroups*, October 2011.
- *Generalized Johnson homomorphisms and non-finitely presentable subgroups of $Aut(F_n)$* , at the *Workshop on the Torelli group, mapping class group, and $Out(F_n)$* , the Ohio State University, May 2011.
- *The connectivity threshold and automorphisms of random right-angled Artin groups*, at the AMS spring western sectional meeting, special session *Geometric group theory and dynamics*, May 2011
- *Stable commutator length and maps from bounded surfaces to closed surfaces*, at the Joint Mathematics Meetings, AMS special session Geometric Group Theory, January 2011
- *An analogue of the Birman exact sequence for automorphism groups of free groups*, at the *6th William Rowan Hamilton Geometry and Topology Workshop*, Trinity College, Dublin, Ireland, September 2010.
- *Peak reduction on right-angled Artin groups*, at the *International Conference on Geometric & Combinatorial Methods in Group Theory & Semigroup Theory*, U. Nebraska, May 2009.
- *Crossed homomorphisms of mapping class groups via nilpotent homogeneous spaces*, topology seminar, UC Santa Barbara, February 2009.
- *Finite generation of subgroups of automorphism groups of right-angled Artin groups*, geometric group theory seminar, Tufts University, April 2008.
- *Peak reduction on right-angled Artin groups*, geometric group theory seminar, the Ohio State University, April 2008.