

John Arthur Baldwin

CURRICULUM VITÆ

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PERSONAL Born September 11, 1981 in Huntsville, AL, USA.

RESEARCH INTERESTS Knot theory and low-dimensional topology. Heegaard Floer homology. Contact and symplectic geometry. Gauge theory. Khovanov-Rozansky homology.

EDUCATION

- 2003-2008. **Columbia University**, New York, NY.
Ph.D. Mathematics, with Distinction, 2008.
Advisor: Peter Ozsváth.
Thesis: *Heegaard Floer homology, contact geometry, and open books*.
- 1999-2003. **Harvard University**, Cambridge, MA.
A.B. Mathematics, 2003.

FELLOWSHIPS

- 2011-2014. NSF Grant DMS-1104688.
- 2008-2011. NSF Postdoctoral Fellowship.
- 2003-2007. Columbia University Faculty Fellowship.

ACADEMIC POSITIONS

- 2012-. Assistant Professor, Boston College
- 2011-2012. Assistant Professor, Princeton University.
- 2008-2011. Veblen Research Instructor, Princeton University & IAS.
- March 2010. Research Member, Mathematical Sciences Research Institute.

PREPRINTS AND PUBLICATIONS

1. Contact invariants in sutured monopole and instanton homologies, with S. Sivek. In preparation.
2. Grid diagrams and the spectral sequence from Khovanov homology to Heegaard Floer homology. In preparation.
3. On transverse invariants in knot Floer and HOMFLY-PT homologies. In preparation.
4. Admissible transverse surgery does not preserve tightness, with J. Etnyre. In preparation.

5. On the equivalence of transverse invariants in knot Floer homology, with V. Vertesi and D. S. Vela-Vick. In preparation.
6. A combinatorial spanning tree model for knot Floer homology, with A. Levine. Submitted.
7. Capping off open books and the Ozsváth-Szabó contact invariant. Submitted.
8. Contact monoids and Stein cobordisms. To appear in *Mathematical Research Letters*.
9. Computations of Heegaard-Floer knot homology, with W. D. Gillam. To appear in *Journal of Knot Theory and its Ramifications*.
10. A note on the support norm of a contact structure, with J. Etnyre. *Proceedings of Symposia in Pure Mathematics* **82**: 79-88 (2011).
11. On the spectral sequence from Khovanov homology to Heegaard Floer homology. *International Mathematics Research Notices*. **2011** (15): 3426-3470 (2011).
12. Comultiplication in knot Floer homology and transversely non-simple links. *Algebraic & Geometric Topology* **10**: 1417-1436 (2010).
13. Khovanov homology, open books, and tight contact structures, with O. Plamenevskaya. *Advances in Mathematics* **224** (6): 2544-2582 (2010).
14. Heegaard Floer homology and genus one, one boundary component open books. *Journal of Topology* **15** (2): 963-992 (2008).
15. Comultiplicativity of the Ozsváth-Szabó contact invariant. *Mathematical Research Letters* **15** (2): 273-287 (2008).
16. Tight contact structures and genus one fibered knots. *Algebraic & Geometric Topology* **7**: 701-735 (2007).
17. Self-conjugate t-core partitions, sums of squares, and p-blocks of A_n , with M. Depeweg, B. Ford, A. Kunin, and L. Sze. *Journal of Algebra* **297**: 438-452 (2006).
18. A reciprocity theorem for monomer-dimer coverings, with N. Anzalone, I. Bronshtein, and T. K. Petersen. *Discrete Mathematics and Theoretical Computer Science* **AB**: 179-194 (2003).

INVITED COLLOQUIUM TALKS

- LSU Colloquium, January 2011.
- U Arkansas Colloquium, January 2011.
- USC Colloquium, January 2011.
- Boston College Colloquium, November 2010.
- Washington University Colloquium, November 2010.
- IAS Members Seminar, February 2010.
- Bryn Mawr - Haverford BiCollege Colloquium, April 2009.

INVITED CONFERENCE TALKS

- AMS SS on “Knot Theory”, January 2012.
- AMS SS on “Low-Dimensional Topology and Geometry”, September 2011.

- Low-Dimensional Topology Workshop, Simons Center, June 2011.
- AMS SS on “Knots, Surfaces, and 3-manifolds”, May 2011.
- MSRI Research Workshop, March 2010.
- AMS SS on “Low Dimensional Topology and Geometry”, April 2009.
- OK State Conference on Topology and Geometry of Knots, March 2009.
- AMS SS on “Gauge theory in smooth and symplectic topology”, March 2008.
- Georgia Topology Conference, May 2007.

INVITED SEMINAR TALKS

- Columbia Symplectic Geometry, Gauge Theory, and Categorification Seminar, December 2011.
- MIT Geometry and Topology Seminar, November 2011.
- Michigan State Low-Dimensional Topology Seminar, November 2011.
- UGA Topology Seminar, October 2011.
- Northwestern Geometry & Physics Seminar, May 2011.
- Princeton Topology Seminar, April 2011.
- GA Tech Topology Seminar, April 2011.
- MIT Geometry Seminar, February 2011.
- Duke Geometry & Topology Seminar, December 2010.
- Washington University Geometry & Topology Seminar, November 2010.
- Rutgers Geometry & Topology Seminar, November 2010.
- LA Joint Topology Seminar, November 2010.
- SUNY Stony Brook Topology Seminar, April 2010.
- Philadelphia Area Topology Seminar at Temple, April 2010.
- Harvard Gauge Theory & Symplectic Geometry Seminar, April 2010.
- Princeton Topology Seminar, November 2009.
- Columbia Symplectic Geometry & Gauge Theory Seminar, February 2009.
- UVA Geometry Seminar, November 2008.
- Michigan State Topology Seminar, November 2008.
- Princeton Topology Seminar, October 2008.
- Rice Topology Seminar, September 2008.
- Princeton Topology Seminar, December 2007.
- MIT Symplectic Geometry Seminar, September 2007.
- USC Geometry & Topology Seminar, November 2006.

TEACHING

- Fall 2011: Junior Seminar: Knot theory.
- Fall 2011: Honors Linear Algebra.
- Fall 2010: Calculus I.
- Spring 2009: Advanced Multivariable Calculus.
Honors Linear Algebra.
- Spring 2007: Calculus I.
- Fall 2006: Calculus I.

SERVICE AND SYNERGISTIC ACTIVITIES

- Referee for *Advances in Mathematics*, *Algebraic & Geometric Topology*, *Geometry & Topology*, *International Mathematics Research Notices*, *Journal of Differential Geometry*, *Mathematical Research Letters*, *Proceedings of the American Mathematical Society*.
- 2008-2009. Co-organizer of Princeton graduate seminar on Khovanov and Floer homology theories.
- 2009-2011. Co-organizer of Princeton Topology Seminar.
- 2011. Organizer of Informal Seminar on Floer Homology.

ADVISING

- 2011. Daniel Kriz, Princeton Undergraduate Research Program.
- 2011. Mike Wong, Princeton Undergraduate Research Program.
- 2011. Jack Sempliner, Intel Science Talent Search project.

REFERENCES

- Peter Ozsváth, Princeton University.
- Zoltan Szabó, Princeton University.
- Ko Honda, University of Southern California.
- John Etnyre, Georgia Institute of Technology