Jesse Burke

CURRICULUM VITAE

Employment

Australian National University, September 2015 - present, Research Fellow.
University of California, Los Angeles, July 2012 - September 2015, Assistant Adjunct Professor.
Universität Bielefeld, Representation Theory Group, Jan. 2011 - June 2012, Research Assistant.

Education

University of Nebraska-Lincoln, Ph.D. Mathematics, December 2010, Advisor: Srikanth Iyengar.

Syracuse University, B.S. Mathematics, B.S. Computer Science, May 2004.

Papers

9. *Transfer of A-infinity structures to projective resolutions* - arXiv:1801.08933, 20 pages, preprint.

8. *Strictly unital A-infinity algebras* - arXiv:1801.06943, 28 pages, to appear in Journal of Pure and Applied Algebra.

7. *Golod rings and higher homotopies* - arXiv:1508.03782, 24 pages, preprint.

6. *The derived category of a graded Gorenstein ring* (with Greg Stevenson) - Commutative Algebra and Noncommutative Algebraic Geometry, Volume II: Research Articles, MSRI Publications 68, 2015, 93-123.

5. *Building modules from the singular locus* (with Lars Winther Christensen and Ryo Takahashi) - Math. Scand. 116, 2015, no. 1, 23-33.

4. *Matrix factorizations in higher codimension* (with Mark Walker) - Transactions of the AMS. 367, 2015, 3323-3370.

3. *Matrix factorizations over projective schemes* (with Mark Walker) - Homology, Homotopy, and Applications, Vol. 14, 2012, No. 2, 37-61.

2. *The cone of Betti diagrams over a hypersurface ring of low embedding dimension* (with Christine Berkesch, Daniel Erman, and Courtney Gibbons) - Journal of Pure and Applied Algebra, 216, 2012, 2256-2268.

1. *Finite injective dimension over rings with Noetherian cohomology* - Mathematical Research Letters, Vol. 19, 2012, No. 4, 741-752.

Seminar and Conference Talks

AustMS Annual Meeting, Category Theory, Algebraic Topology, K-theory session, December 2017.
Representation Theory and Topology at Kioloa, November 2017.
University of Sydney, Algebra Seminar, October 2017.
University of Nebraska-Lincoln, Commutative Algebra Seminar, September 2017.
Australian National University, Algebra and Topology Seminar, October 2016.
International Conference on Representations of Algebras (ICRA), Syracuse University, August 2016.
University of Southern California, Algebra Seminar, February 2016.
Australian National University, Algebra and Topology Seminar, February 2016.
University of Melbourne, Algebra/Geometry/Topology Seminar, December 2015.
Representation Theory and Topology at Kioloa, November 2015.
Groups, Representations and Cohomology, Conference in honor of Dave Benson's 60th Birthday, Isle of Skye, June 2015.
University of California, Berkeley, Commutative Algebra Seminar, October 2014.

AMS Sectional Meeting, San Francisco, Categorical Methods in Representation Theory, October 2014.

University of Utah, Commutative Algebra Seminar, September 2014.

AMS Sectional Meeting, Lubbock, TX, Homological Methods in Algebra, April 2014.

University of California, Berkeley, Commutative Algebra Seminar, February 2014.

University of California, Los Angeles, Algebra Seminar, February 2014.

AMS Sectional Meeting, Riverside, Homotopy Theory and K-Theory, November 2013.

University of Nebraska-Lincoln, Commutative Algebra Seminar, September 2013.

Southern California Algebra Conference, Los Angeles, April 2013.

University of California, Riverside, Topology Seminar, April 2013.

MSRI, Representation Theory, Homological Algebra, and Free Resolutions, February 2013 (25 minute talk).

University of Michigan, Algebra Seminar, February 2013.

AMS Joint Meetings, San Diego, Homotopy Theory and Commutative Algebra, January 2013.

Cornell University, Syzygies Workshop, 25 minute talk, November 2012.

University of Southern California, Algebra Seminar, November 2012.

Commutative Algebra and Its Interactions with Algebraic Geometry, Representation Theory, and Physics, Guanajuato, Mexico, 25 minute talk, May 2012.

University of Nebraska-Lincoln, Commutative Algebra Seminar, November 2011.

Bielefeld Uniersity, BIREP (Bielefeld Representation theory) Seminar, October 2011.

Bielefeld University, BIREP Seminar, March 2011.

Texas Tech, Algebra Seminar, November 2009.

AMS Sectional Meeting, Penn State, Commutative Algebra, October 2009.

University of Kansas, Algebra Seminar, October 2009.

University of Missouri, Algebra Seminar, September 2009.

University of Nebraska-Lincoln, Commutative Algebra Seminar, September 2009.

Texas Tech, Algebra Seminar, March 2009.

Grants/External Support

Research grant from the DFG[1] Priority Programme in Representation Theory for €135,000, starting April 2012, to extend position at Bielefeld University for thirty months. I declined the grant, to accept a position at UCLA.

Mentoring through Critical Transition Points Fellowship, January - December 2009, funded by NSF.

Graduate Assistance in Areas of National Need (GAANN) Fellowship, August 2007 - May 2008, Funded by the Department of Education.

Graduate Assistance in Areas of National Need (GAANN) Fellowship, August 2006 - May 2007, Funded by the Department of Education.

Teaching

Algebra I add-on, on Rubik's Cube - ANU 2017 Semester 2.

Algebra II: Galois Theory - ANU 2016 Semester 1 (co-taught with Bregje Pauwels).

Linear Algebra - UCLA Summer 2015.

Complex Analysis and Applications - UCLA Spring 2015.

Linear Algebra - UCLA Winter 2015.

Analysis - UCLA Fall 2014.

Integration and Infinite Series (Calculus II) - UCLA Summer 2014.

Linear Algebra - UCLA Spring 2014.

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[1] Deutsche Forschungsgemeinschaft, i.e. German Research Foundation, analogous to the NSF in the US.

Integration and Infinite Series (Calculus II) - UCLA Winter 2014.
Commutative Algebra, graduate class - UCLA Fall 2013.
Linear Algebra - UCLA Spring 2013.
Linear Algebra and Applications - UCLA Winter 2013.
Analysis - UCLA Fall 2012.
Introduction to Algebraic Geometry - Bielefeld Fall 2011 (co-taught with Greg Stevenson).
Algebra and Trigonometry - UNL Fall 2010.
Algebra and Trigonometry - UNL Spring 2010.
Calculus III - UNL Fall 2008.
Linear Algebra - UNL Fall 2007.
College Algebra - UNL Fall 2006.
Calculus II - UNL Summer 2006.
Calculus I - UNL Spring 2006 (recitation).
Calculus II - UNL Fall 2005 (recitation).

Service Activities

Refereed for: Advances in Mathematics, Algebra and Number Theory, Communications in Algebra, Compositio Mathematica, Duke Journal of Mathematics, International Mathematics Research Notices, Journal of Algebra, Journal of Pure and Applied Algebra, Proceedings of the AMS.
Co-organizer, with Henning Krause, Workshop on Matrix Factorizations, May 6 - 8, 2011, Bielefeld.
Organizer, Reading seminar on matrix factorizations, January - May 2011, Bielefeld.
Co-organizer, UNL Commutative Algebra Reading Seminar, 2008-2009.

References

Amnon Neeman, Australian National University.
Eric Friedlander, University of Southern California.
Mark Walker, University of Nebraska-Lincoln.