JULIA BERGNER

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Employment

Assistant Professor, University of California, Riverside, beginning July 2008

Postdoctoral Instructor, Kansas State University, August 2005-June 2008

Education

Ph.D. in Mathematics, University of Notre Dame, May 2005
Dissertation: Three models for the homotopy theory of homotopy theories
Advisor: William Dwyer.

M.S. in Mathematics, University of Notre Dame, January 2002.

B.S. in Mathematics, B.A. in English, Gonzaga University, May 2000.

Areas of Interest

Homotopy Theory and Algebraic Topology, applications to Representation Theory

Publications

Rigidification of algebras over multi-sorted theories, *Algebr. Geom. Topol.* 6 (2006) 1925-1955.

A model category structure on the category of simplicial categories, *Trans. Amer. Math. Soc.* 359 (2007), 2043-2058.

Three models for the homotopy theory of homotopy theories, *Topology* 46 (2007), 397-436.

Simplicial monoids and Segal categories, *Contemp. Math.* 431 (2007) 59-83.

A characterization of fibrant Segal categories, *Proc. Amer. Math. Soc.* 135 (2007) 4031-4037.

Adding inverses to diagrams encoding algebraic structures, *Homology, Homotopy Appl.* 10(2), 2008, 149-174.

Adding inverses to diagrams II: Invertible homotopy theories are spaces, *Homology, Homotopy Appl.* 10(2), 2008, 175-193.

Complete Segal spaces arising from simplicial categories, *Trans. Amer. Math. Soc.* 361 (2009), 525-546.

A survey of $(\infty,1)$-categories, to appear in proceedings of the IMA workshop on n-categories

Teaching Experience

University of California, Riverside:

Algebraic Topology II

Introduction to Topology II

Advanced Calculus I

Kansas State University:

Topics in Mathematics for Secondary School Teachers (Number Patterns)

Foundations of Geometry

Contemporary Mathematics

Topics in Mathematics for Secondary School Teachers (Connections Between Algebra and Geometry)

Algebraic Topology 2 (Topics in Homotopy Theory)

Algebraic Topology

Teaching Experience, continued

Directed Readings in Homological Algebra

Topics in Mathematics for Secondary School Teachers (Mathematics of Finance, Probability, and Statistics, team-taught with Andrew Bennett)

History of Mathematics

Mathematics for Elementary School Teachers

University of Notre Dame:

Calculus B (for pre-medicine students)

Calculus II for Business

Calculus I (for math, science, and engineering students)

Elements of Calculus I (for business and arts and letters students)

Selected Invited Talks

"Homotopy fiber products of homotopy theories in quantum algebra," Conference on Topological Field Theories and Related Geometry and Topology, Northwestern University (May 2009)

"Hall algebras associated to stable complete Segal spaces," Homotopy Theory and Applications, University of Nebraska, Lincoln (April 2009)

"Thirteen ways of looking at a topological group," Colloquium, University at Buffalo (March 2009)

"Homotopical versions of Hall algebras," Special Session on Homotopy Theory and Higher Category Theory, Joint Mathematics Meetings, Washington, DC (January 2009)

"Diagrams of simplicial sets inducing algebraic structures," SECA V, Pontevedra, Spain (September 2008)

"Algebraic applications of the homotopy theory of homotopy theories," CATS-3, Centro di Ricerca Matematica Ennio De Giorgi, Pisa, Italy (September 2008)

"Algebraic applications of the homotopy theory of homotopy theories," HOCAT 2008 - Homotopy Structures in Geometry and Algebra; Derived Categories, Higher Categories, Centre de Recerca Matemàtica, Barcelona, Spain (July 2008)

"Derived Hall algebras for stable homotopy theories," Topology seminar, University of Chicago (March 2008)

"Homotopy fiber products of homotopy theories," Session on Homotopy Theory, Canadian Mathematical Society Winter Meeting, London, Ontario (December 2007)

"Derived Hall algebras for stable homotopy theories," Topology seminar, University of Illinois, Urbana-Champaign (December 2007)

"Homotopy fiber products of homotopy theories," Special Session on Recent Developments in Algebraic Topology, AMS Sectional Meeting, Middle Tennessee State University (November 2007)

"Derived Hall algebras for stable homotopy theories," Topology seminar, Massachusetts Institute of Technology (October 2007)

"Understanding model categories via complete Segal spaces," Topology seminar, University of Oslo (July 2007)

"Model categories equivalent to the quasi-category model structure," Workshop on Higher Categories and Applications, Fields Institute, Toronto (January 2007)

"Thirteen ways of looking at a topological group," AWM Workshop for Graduate Students and Recent Women Ph.D.s, Joint Mathematics Meetings, New Orleans, Louisiana (January 2007)

"Model categories, dg categories, and derived Hall algebras," MacLane Memorial Conference, University of Chicago (April 2006)

"Using Segal categories to understand simplicial monoids and simplicial categories," Conference on Categories in Algebra, Geometry and Mathematical Physics, Macquarie University, Australia (July 2005)

Conferences and Seminars Organized

Special Session on Homotopy Theory and Higher Algebraic Structures (with John Baez), AMS Sectional Meeting, University of California, Riverside (November 2009)

Panel Discussion on Graduate Education, Joint Mathematics Meetings (with Tara Holm and Jeremy Martin), New Orleans, Louisiana (January 2007)

Faculty advisor for Graduate Student Algebra Conference, Kansas State University (May 2006)

Graduate Student Topology Conference, University of Notre Dame (April 2003)

Graduate Student Topology Seminar, University of Notre Dame (2003-2005)

Awards

Project NExT Fellow, 2006-07.

Clare Boothe Luce Foundation Fellowship, August 2000–May 2005.

Outstanding Graduate Student Teacher Award, Kaneb Center for Teaching and Learning, University of Notre Dame, Spring 2003

Striving for Excellence in Teaching Certificate, Kaneb Center for Teaching and Learning, University of Notre Dame, Spring 2003

Teaching Well Using Technology Certificate, Kaneb Center for Teaching and Learning, University of Notre Dame, Fall 2004

Grants

NSF Topology Award DMS-0805951

Invited visitor at the Centre de Recerca Matemàtica, Barcelona, April 2008

Funding to visit Fields Institute, Toronto, Spring 2007

Kansas Mathematics and Science Partnership Grant (for Infinite Mathematics Project), Winter 2007

NSF Funding for Graduate Student Algebra Conference, Spring 2006

Other Professional Activities

Instructor for the George Washington University Summer Program for Women in Mathematics (June-July 2009)

Reviewer for Mathematical Reviews (since 2006)

Referee for *K-Theory*, *Advances in Mathematics*, *London Mathematical Society*, and *Pacific Journal of Mathematics*

Fellow of the Center for Quantitative Education at Kansas State University, working with the KSU-PDS Partnership Project, a partnership of Kansas State University, three community colleges, and five public school districts to improve the preparation of current and future teachers (June 2005-June 2008)

Sessions for the Girls Researching Our World (GROW) program for middle school girls at Kansas State University (2007 and 2008)

Team guide for International Mathematics Olympiad (July 2001)

Participant in the George Washington University Summer Program for Women in Mathematics (June-August 1998)

Professional Memberships

American Mathematical Society

Mathematics Association of America

Association for Women in Mathematics