Curriculum Vitae

Brian Pike

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Research Interests

Singularities of complex analytic varieties, the singularity theory of differentiable maps, free divisors, and connections between these topics and representation theory

Positions held

Postdoctoral Fellow, University of Toronto, Scarborough — July 2011–June 2014
Visiting Lecturer, University of North Carolina at Chapel Hill — August 2010–May 2011

Education

Ph.D., Mathematics, University of North Carolina at Chapel Hill — August 2010
Title: "Singular Milnor Numbers of Non-Isolated Matrix Singularities"
Advisor: James Damon
B.S., Applied Mathematics, North Carolina State University, Summa cum laude — May 2005
B.S., Computer Science, North Carolina State University, Summa cum laude — May 2005

Papers and Preprints

[1] Brian Pike. Additive relative invariants and the components of a linear free divisor. arXiv:1401.2976 [math.RT].

[2] Ragnar-Olaf Buchweitz and Brian Pike. Lifting free divisors. arXiv:1310.7873 [math.AG].

[3] Brian Pike. On Fitting ideals of logarithmic vector fields and Saito's criterion. arXiv:1309.3769 [math.AG].

[4] James Damon and Brian Pike. Solvable groups, free divisors and nonisolated matrix singularities II: Vanishing topology. *Geom. Topol.*, 18(2):911–962, 2014. Available at `http://dx.doi.org/10.2140/gt.2014.18.911` or arXiv:1201.1579 [math.AG].

[5] James Damon and Brian Pike. Solvable groups, free divisors and nonisolated matrix singularities I: Towers of free divisors. Submitted to *Annales Inst. Fourier*. arXiv:1201.1577 [math.AG].

[6] James Damon and Brian Pike. Solvable group representations and free divisors whose complements are $K(\pi, 1)$'s. *Topology Appl.*, 159(2):437–449, 2012. Available at `http://dx.doi.org/10.1016/j.topol.2011.09.018` or arXiv:1310.8280 [math.AT].

[7] David A. Pike, Lígia Pizzatto, Brian A. Pike, and Richard Shine. Estimating survival rates of uncatchable animals: the myth of high juvenile mortality in reptiles. *Ecology*, 89:607–611, 2008. Available at `http://dx.doi.org/10.1890/06-2162.1`.

Honors, Grants and Scholarships

Oberwolfach Leibniz Graduate Student grant recipient — 2012
GAANN Fellowship, UNC-Chapel Hill — Spring 2009

GAANN Fellowship, UNC-Chapel Hill	Fall 2007
Betty and Lee Smith Fund for Excellence in Mathematics Award, UNC-Chapel Hill	2005
Levine–Anderson Award, North Carolina State University	2005
Phi Beta Kappa	2003
COMAP Mathematical Contest in Modeling, Meritorious	2001, 2002
National Merit Scholarship	2001–2005

Teaching Experience

At the University of Toronto, Scarborough:	
MATA32H3, Calculus for Management I	Winter 2014
MATC58H3, An Introduction to Mathematical Biology	Fall 2013
MATA32H3, Calculus for Management I	Fall 2012
MATA37H3, Calculus II for Mathematical Sciences	Summer 2012
MATA31H3, Calculus I for Mathematical Sciences	Winter 2012
MATA30H3, Calculus I for Biological and Physical Sciences	Fall 2011
At the University of North Carolina at Chapel Hill:	
Math 152, Business Calculus	Spring 2011
Math 232, Calculus of functions of one variable II	Fall 2010
Math 233, Calculus of functions of several variables	Spring 2010
Math 118, Selected Topics in Mathematics	Fall 2009
Math 110, College Algebra	Summer 2009
Math 232, Calculus of functions of one variable II	Fall 2008
Math 231, Calculus of functions of one variable I	Summer 2008
Math 118, Selected Topics in Mathematics	Spring 2008
Math 232, Calculus of functions of one variable II	Fall 2007
Math 110, College Algebra	Summer 2007
Math 118, Selected Topics in Mathematics	Spring 2007
Math 110, College Algebra (Lecturing and grading only)	Fall 2006
Grading for various courses	2005–2006

Other Experiences

Research Experience for Undergraduates, Florida State University	Summer 2004
Budapest Semesters in Mathematics	Spring 2004
Participant in COMAP's Mathematical Contest in Modeling	2001, 2002, 2003

Talks Given

"A crash course in Geometric Invariant Theory," Homological Methods Seminar, University of Toronto	Feb. 12, 2014
"The number of irreducible components of a linear free divisor," Joint Mathematics Meetings, AMS Special Session on Hyperplane Arrangements and Applications, Baltimore, MD	Jan. 15, 2014
"Properties of preprojective algebras," Homological Methods Seminar, University of Toronto	Oct. 24, 2013
"Milnor fibers of nonisolated singularities," Algebra Seminar, University of Western Ontario	Apr. 30, 2013
"Derived Morita theory," Homological Methods Seminar, University of Toronto	Feb. 5, 2013
"Maximal Cohen-Macaulay modules of Kleinian singularities," Homological Methods Seminar, University of Toronto	Oct. 10, 2012

"The number of irreducible components of a linear free divisor," Singularities, Oberwolfach, Germany	Sep. 27, 2012
"Bicategories and Matrix Factorizations," Homological Methods Seminar, University of Toronto	Sep. 12, 2012
"The number of irreducible components of a linear free divisor," Bruce 60/Wall 75 workshop, Liverpool, U.K.	June 18, 2012
"The two meanings of 'matrix factorizations'," Commutative Algebra and its Interactions with Algebraic Geometry, Representation Theory, and Physics, Guanajuato, Mexico	May 14, 2012
"Linear free divisors from block representations," Homological Methods Seminar, University of Toronto	Jan. 25, 2012
"The singular Milnor numbers of matrix singularities," Homological Methods Seminar, University of Toronto	Nov. 23, 2011
"An Introduction to Linear Free Divisors III," Homological Methods Seminar, University of Toronto	Oct. 19, 2011
"An Introduction to Linear Free Divisors II," Homological Methods Seminar, University of Toronto	Oct. 12, 2011
"An Introduction to Linear Free Divisors I," Homological Methods Seminar, University of Toronto	Oct. 5, 2011
"Block representations and their properties," Workshop on Free Divisors, University of Warwick, U.K.	May 31, 2011
"Linear free divisors arising from representations of solvable groups," 11th International Workshop on Real and Complex Singularities, São Carlos, Brazil	July 27, 2010
"How to use computer resources effectively," Graduate Seminar, UNC-Chapel Hill	Fall 2009
"What is Singularity Theory?" Graduate Seminar, UNC-Chapel Hill	Spring 2008
"Optimal Racing Strategies," North Carolina State University	Fall 2004

Service

Co-organized the Homological Methods Seminar at the University of Toronto	Fall 2011–Present
Helped grade the Canadian Open Mathematics Challenge (COMC) contest	November 2011
Helped prepare students for the Mathematical Contest in Modeling	2008, 2009
Graduate Mathematics Association Vice President	2007–2008

Conferences Attended

Joint Mathematics Meetings, Baltimore, MD	Jan. 15–18, 2014
Interactions between Noncommutative Algebra, Representation Theory, and Algebraic Geometry, MSRI, Berkeley, CA	Apr. 8–12, 2013
Singularities, MFO, Oberwolfach, Germany	Sep. 24–28, 2012
Bill Bruce 60 and Terry Wall 75, An international workshop in Singularity Theory, its Applications and Future Prospects, Liverpool, U.K.	June 18–22, 2012
Commutative Algebra and its Interactions with Algebraic Geometry, Representation Theory, and Physics, a CIMAT/PASI workshop, Guanajuato, Mexico	May 14–18, 2012
Interactions between Commutative Algebra and Representation Theory, Syracuse University, Syracuse, NY	April 13–15, 2012
Workshop on Free Divisors, University of Warwick, U.K.	May 31–June 4, 2011
11th International Workshop on Real and Complex Singularities, ICMC-USP, São Carlos, Brazil	July 26–30, 2010
Topology of Stratified Spaces, MSRI, Berkeley, CA	Sep. 8–12, 2008
Geometry and Statistics of Shape Spaces, SAMSI, Raleigh, NC	July 7–13, 2007

References

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* = can address teaching