

# W. Frank Moore

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Wake Forest University  
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## EDUCATION

**Ph.D.** Mathematics, August 2008  
University of Nebraska–Lincoln  
Thesis: *Cohomology of local rings*  
Thesis Advisor: Professor Luchezar L. Avramov, Dale M. Jensen Chair in Mathematics  
**M.S.** Mathematics, May 2004  
University of Nebraska–Lincoln  
**B.S.** Mathematics with Honors, May 2002  
University of Texas at Arlington  
Honors Thesis: *Building modules having prescribed cohomological support set*  
Honors Thesis Advisor: Professor David Jorgensen

## EMPLOYMENT

**Assistant Professor**  
Wake Forest University (2011 - Present)  
**H.C. Wang Assistant Professor**  
Cornell University (2008 - 2011)  
**Graduate Teaching Assistant**  
University of Nebraska – Lincoln (2002 - 2008)  
**Computer Programmer**  
MLS Computer Services (1999 - 2002)

## PUBLICATIONS

*Computations with noncommutative algebras using Bergman and Macaulay2*  
with Andrew Conner and Courtney Gibbons, in preparation  
*Totally acyclic approximations,*  
with Petter Bergh and David Jorgensen, submitted.  
Available at arXiv:1606.07976  
*On discriminants of certain extension rings,*  
with Jason Gaddis and Ellen Kirkman, submitted.  
Available at arXiv:1606.03105  
*Periodic free resolutions from twisted matrix factorizations,*  
with Tom Cassidy, Andrew Connor, and Ellen Kirkman  
Journal of Algebra 455 (2016), 137–163,  
*Finiteness conditions on the Yoneda algebra of a monomial algebra,*  
with Andrew Conner, Ellen Kirkman and James Kuzmanovich  
Journal of Pure and Applied Algebra 218 (2014), no. 1, 5264.  
*Moment angle complexes and big Cohen-Macaulayness*  
with Shisen Luo and Tomoo Matsumura  
Algebraic and Geometric Topology 14 (2014), no. 1, 379406.  
*Connected sums of simplicial complexes and equivariant cohomology*  
with Tomoo Matsumura  
Osaka Journal of Mathematics 51 (2014), no. 2, 405423.  
*The vanishing of a higher codimension analog of Hochster’s theta invariant,*  
with Greg Peipmeyer, Sandra Spiroff, and Mark E. Walker  
Mathematische Zeitschrift 273 (2013), no. 3-4, 907–920  
*Connected sums of Gorenstein local rings and structure of cohomology algebras,*  
with Luchezar L. Avramov and H. Anantharayan  
Journal für die reine und angewandte Mathematik (Crelle’s journal) 667 (2012), 149–176  
*Hochster’s theta function and the Hodge-Riemann bilinear relations,*  
with Greg Peipmeyer, Sandra Spiroff, and Mark E. Walker.  
Advances in Mathematics 226 (2011), no. 2, 1692–1714  
*Minimal intersections and vanishing (co)homology,*  
with David A. Jorgensen  
Journal of Commutative Algebra 3 (2009), no. 3, 507–536  
*Cohomology over fiber products of local rings,*  
Journal of Algebra 321 (2009), no. 3, 758–773,

- SOFTWARE**
- NCA**lgebra: A Macaulay2 noncommutative algebra package  
Available at <http://users.wfu.edu/moorewf>  
Written with Andrew Conner and Courtney Gibbons
- DGA**lgebras: A Macaulay2 differential graded algebra package  
Available at <http://users.wfu.edu/moorewf>
- EXTERNAL FUNDING**
- Intensive Workshop for Macaulay2 Package Development**  
With Amelia Taylor, Colorado College  
NSA Grant #H98230-11-1-0238 (\$12,050), NSF grant DMS-1158900 (\$17,126)  
Wake Forest University, Winston-Salem, NC, August 2012
- AWARDS AND FELLOWSHIPS**
- Wake Forest University**  
A. J. Sterge Faculty Fellow, 2016-2018  
CRADLE IV Fellow, 2013-2015
- Cornell University**  
Junior Faculty Teaching Award, 2010
- University of Nebraska**  
Outstanding Teaching by a GTA, 2007  
Mentoring Through Critical Transition Points Fellow, 2006  
Emeritus Faculty Fellow, 2004-2005 and 2005-2006  
Maude Hammond Fling Fellow, University of Nebraska, 2004-2005  
Honorable Mention, Outstanding Teaching by a GTA, 2004
- CONFERENCES ORGANIZED**
- Intensive Workshop for Macaulay2 Package Development**  
With Hirotachi Abo, Zach Teitler, Michael Stillman, Daniel Grayson and David Eisenbud  
External funding from Macaulay2 NSF Grant  
University of California, Berkeley, CA, May 2015
- 1107th AMS Meeting**  
With Ela Celikbas and Olgur Celikbas, University of Connecticut  
Special session on Algebra and Representation Theory  
Georgetown University, Washington, DC, March 2015
- Intensive Workshop for Macaulay2 Package Development**  
With David Swinarski, Sonja Mapes, Michael Stillman, Daniel Grayson and David Eisenbud  
External funding from Macaulay2 NSF Grant  
University of California, Berkeley, CA, January 2014
- Intensive Workshop for Macaulay2 Package Development**  
With Amelia Taylor, Colorado College  
With external funding from NSA Grant #H98230-11-1-0238, NSF Grant DMS-1158900  
Wake Forest University, Winston-Salem, NC, August 2012
- 1073th AMS Meeting**  
With Allen Knutson, Cornell University  
Special session on combinatorial algebraic geometry  
Wake Forest University, Winston-Salem, NC, September 2011
- EXTERNAL SERVICE**
- Professional**  
NSF Grant Review Panelist  
Reviewer for: MathSciNet, Journal of K-Theory,  
Communications in Algebra, Proceedings of the AMS,  
Journal of Symbolic Computation, Springer  
Journal of Commutative Algebra, Osaka Journal of Mathematics
- Community**  
MATHCOUNTS volunteer judge, 2012, 2014 – Present
- PROFESSIONAL MEMBERSHIPS**
- American Mathematical Society (2002–Present)**  
**Mathematical Association of America (2006–Present)**  
**Association for Women in Mathematics (2015–Present)**  
**Society for Industrial and Applied Mathematics (2015–Present)**

**RECENT TEACHING  
EXPERIENCE****Assistant Professor**

Wake Forest University, 2011–Present

Courses taught or teaching as principal lecturer:

*Topics in Discrete Mathematics – Representation Theory of  $S_n$* *Graduate Abstract Algebra II**Graduate Abstract Algebra I**Linear Algebra II**Modern Algebra**Advanced Linear Algebra (Newly developed course, Spring 2016)**Operations Research**Linear Algebra I**Calculus II**Calculus I***H.C. Wang Assistant Professor**

Cornell University, 2008–2011

Courses taught as principal lecturer:

*Graduate Topics in Commutative Algebra**Graduate Commutative Algebra**Computational Algebra**Honors Linear Algebra for mathematics majors**Linear Algebra**Multivariable Calculus for Engineers**Calculus for Engineers (Junior Faculty Teaching Award)***UNIVERSITY  
SERVICE****Wake Forest University****Advising**

Lower Division Advisor, Fall 2012 – Present

Incoming Freshman Course Registration, 2015, 2016

Faculty House Calls, 2013 – Present

Undergraduate Project Advisor

2015 – 2016: Mike Annunziata

2014 – 2015: Ariel Hawley

2013 – 2014: Steven Hemric, Ryan Dougherty

Graduate Thesis Advisor

2016 – 2017: Mike Annunziata, Brad Hall

2015 – 2016: Terry Henderson

2014 – 2015: Justin Lyle, Andrew Kobin

**Departmental Committees**

Math Club Faculty Co-Sponsor Fall 2012 – Present

Undergraduate Curriculum Committee, Fall 2011 – Present

Math 112 Committee Chair, Fall 2011

Library Committee, Fall 2011 – Present

Hiring Committee, 2014–2015, 2015–2016

Colloquium Committee, 2011–2012, 2014–2015

**Other Departmental/University Service**

WFU Senior Orations Written Judge, 2016

WFU Richter Graduate Scholarship Committee, 2014 – Present

STEM @ Wake Presenter, 2014 – Present

Math Subject GRE Review Presenter, 2012 – Present

Fall Math Department Picnic Organizer, 2012 – Present

**INVITED  
CONFERENCE  
TALKS**

- 1117th AMS Meeting**  
*Totally acyclic approximations*  
Athens, GA, March 2016
- 2016 Joint Mathematics Meetings**  
*Tools for computing discriminants*  
Seattle, WA, January 2016
- 2015 Joint Mathematics Meetings**  
*Understanding Auslander's Theorem for noncommutative algebras*  
San Antonio, TX, January 2015
- Foundations of Computational Mathematics**  
*Performing computations in noncommutative algebra with Macaulay2 and bergman*  
Montevideo, Uruguay, December 2014
- 1100th AMS Meeting**  
*Periodic free resolutions defined by twisted matrix factorizations*  
Texas Tech University, Lubbock, TX, April 2014
- 1090th AMS Meeting**  
*Cohomology of Monomial Algebras*  
Iowa State University, Ames, IA, April 2013
- Representation Theory, Homological Algebra, and Free Resolutions**  
*Revisiting Auslander's 1962 ICM Address*  
Mathematical Sciences Research Institute, Berkeley, CA, February 11–17, 2013
- 1074th AMS Meeting**  
*Connected sums of simplicial complexes*  
University of Nebraska, Lincoln, NE, October 2011
- Resolutions Day**  
*Connected sums of simplicial complexes*  
Cornell University, Cornell, NY, May 2011
- 1062nd AMS Meeting**  
*On an invariant of graded isolated complete intersection singularities*  
Syracuse University, Syracuse, NY, October 2010
- 1053rd AMS Meeting**  
*Hochster's theta function and the Hodge-Riemann bilinear relations, II*  
Florida Atlantic University, Boca Raton, FL, October 2009
- 1052nd AMS Meeting**  
*Golod homomorphisms and trivial  $\mathcal{G}$ -type*  
Penn State University, State College, PA, October 2009
- 1051st AMS Meeting**  
*Cohomology of connected sums of local rings*  
Baylor University, Waco, TX, October 2009
- 2008 Route 81 Conference**  
*Hochster's theta function*  
Queen's University, Kingston, ON, October 2008
- 2008 Joint Mathematics Meetings**  
*Cohomology of connected sums of artinian Gorenstein rings*  
San Diego, CA, January 2008
- 1030th AMS Meeting**  
*Cohomology of connected sums of artinian Gorenstein rings*  
DePaul University, Chicago, IL, October 2007
- Regional Workshop in the Mathematical Sciences**  
*Resolutions over fiber products*  
University of Nebraska, Lincoln, NE, October 2006
- Workshop on Hilbert functions and monomial resolutions**  
*Cohomology over fiber products of local rings*  
Cornell University, Ithaca, NY, May 2006
- 1011th AMS Meeting**  
*Cohomology over fiber products of local rings*  
San Francisco State University, San Francisco, CA, April 2006
- Texas Undergraduate Mathematics Conference**  
*Panelist for Life in Graduate School*  
Sam Houston State University, TX, October 2005

**CONFERENCES  
ATTENDED  
BY INVITATION**

**Representation Theory, Homological Algebra, and Free Resolutions**

Mathematical Sciences Research Institute, Berkeley, CA, February 11–17, 2013

**Macaulay2 Workshop**

Institute for Mathematics and its Applications, Minneapolis, MN, July 24–30, 2011

**Mathematical Research Communities - Commutative Algebra**

Snowbird, UT, June 26-July 2, 2010

**Macaulay2 Workshop**

Mathematical Sciences Research Institute, Berkeley, CA, January 8-12, 2010

**Commutative Algebra and its Connections to Geometry**

Olinda, Pernambuco, Brazil, August 3-14, 2009

**Macaulay2 Conference**

Cornell University, Ithaca, NY, March 16-19, 2008

**Szygies and Hilbert Functions**

Banff, Alberta, Canada, October 14-19, 2006

**Summer School on Hilbert Functions and Monomial Resolutions**

Cornell University, Ithaca, NY, May 6-13, 2006

**Commutative Algebra and its interactions with Homological Algebra,  
Representation Theory, Intersection Theory, and Singularity Theory**

Minnnowbrook Adirondack Conference Center, NY, August 5-10, 2005

**Summer Research Conference on Commutative Algebra**

Snowbird, UT, June 19-July 1, 2005

**Mini-Course: Classical Problems in Commutative Algebra**

Salt Lake City, UT, June 7-18, 2004

**KUMUNU Algebra Day**, Lawrence, KS, 2003, 2004, 2006

**Interactions with Homological Algebra and Representation Theory**

Mathematical Sciences Research Institute, Berkeley, CA, February 3-7, 2003

**MSRI Introductory Workshop in Commutative Algebra**

Mathematical Sciences Research Institute, Berkeley, CA, September 9-13, 2002