

Education:

Ph.D. (Mathematics)	1996	University of Nebraska
M.S. (Mathematics)	1991	University of Nebraska
B.S. (Mathematics)	1989	San Diego State University

Professional Experience:

Associate Professor	2006–present	University of Texas at Arlington
Assistant Professor	1998–2006	University of Texas at Arlington
Member	Spring 2003	MSRI, Berkeley, CA
Visiting Assistant Professor	1999–00	University of Kansas
Research Lecturer	1996–98	University of Texas at Austin
Graduate Teaching Assistant	1989–92, 1993–96	University of Nebraska
GTA (while visiting)	1992–93	Purdue University

Thesis Advisor/Research Interests: Roger Wiegand/Commutative algebra

Title of Ph.D. Dissertation: *Vanishing of Tor on a complete intersection.*

Grants, Fellowships, Awards:

- NSA Grant H98230-07-1-0063, 2007–08, \$30,000
- UTA Research Excellence Award, Spring 2007, \$6,000
- UTA Research Excellence Award, Spring 2006, \$5,000
- UTA Travel/Professional Development Award, Spring 2006, \$1,000
- UTA Travel/Professional Development Award, Spring 2005, \$1,000
- NSF Grant DMS-0503153, 2005–06, \$12,000
- UTA Faculty Development Leave, Spring 2003
- NSA Grant MDA904-01-1-0062, 2001–03, \$26,000.
- UTA REP Grant, 2000, \$7,054.
- Franklin E. and Orinda M. Johnson Fellowship, 1994–95, UNL.
- NSF Research Assistantship, 1993, Purdue University (while visiting).
- Emeritus Faculty Fellowship, 1991, UNL.
- Outstanding First Year Graduate Student Award, 1990, UNL.
- Outstanding Qualifying Exam Award, 1990, UNL.
- REU Research Assistantship, 1988-1989, SDSU.

Research Institute Supported Memberships/Visits:

- Banff International Research Station for Mathematical Innovation and Discovery, Alberta, Canada (September 2004, one week, all expenses paid)
- Mathematical Sciences Research Institute, Berkeley, CA (Spring 2003, \$3,713)

Professional Society Memberships:

American Mathematical Society
Mathematical Association of America

Courses Taught (1996–present, G = graduate course, R = reading course):

Fall 2007	Algebra and Homology (G), Calculus II
Spring 2007	Linear Algebra, Calculus II, Acyclic Complexes (R), G-Dimension (R)
Fall 2006	Topology (G), Calculus II, Local Algebra (R), Free Resolutions (R)
Spring 2006	Cohen-Macaulay Rings (G), Calculus II

Fall 2005	Abstract Algebra II (G), Calculus II
Spring 2005	Abstract Algebra I (G), Linear Algebra, Koszul Algebras (R)
Fall 2004	Homological Algebra (G), Calculus II, Special Topics (R)
Spring 2004	Algebraic Topology (G), Linear Algebra, Topics in Algebra (R)
Fall 2003	Linear Algebra (G), Calculus II, Topics in Algebra (R)
Spring 2003	on leave
Fall 2002	College Algebra, Linear Algebra, Topics in Algebra (R)
Spring 2002	Cryptography (G), Calculus II
Fall 2001	Coding Theory (G), Abstract Algebra II
Spring 2001	Functional Analysis II (G), Calculus II
Fall 2000	Functional Analysis I (G), Calculus II
Spring 2000	Business Calculus
Fall 1999	Calculus II
Spring 1999	Analysis, College Algebra
Fall 1998	Linear Algebra (G), Calculus II
Spring 1998	Abstract Algebra, Calculus II, Topics in Algebra (R)
Fall 1997	Business Calculus, Linear Algebra
Spring 1997	Abstract Algebra, Calculus II
Fall 1996	Mathematics for Education, Business Calculus

Student Supervision:

Current Ph.D. Students:

Meri Hughes

Paul Stern

Past M.S. Students:

Kristen Beck, August 2005 (directed Master's Thesis *On the image of the totalling functor*)

Neil Slagle, August 2005 (directed Master's Project *A connection between Plücker coordinates and polynomial rings*)

Marcus Hawkins, August 2005 (directed Master's Project *"General" bounded free resolutions for Artinian graded rings*)

Carson Clanton, May 2005 (directed Master's Project *Fitting's Lemma and free resolutions*)

Current Undergraduate Students:

Christopher Aholt (directing Honor's Thesis *On Ext algebras*)

Past Undergraduate Students:

Frank Moore, May 2002 (directed Honor's Thesis *Building modules having a prescribed cohomological support set*)

Editorial, Refereeing, and Reviewing Activities:

Refereed 26 Articles for *Springer-Verlag*, *Libertas Mathematica*, *Journal of Algebra*, *Communications in Algebra*, *Journal of Pure and Applied Algebra*, *Rocky Mountain Journal of Mathematics*, *Proceedings of the American Mathematical Society*, *The Mathematical Monthly*, *The American Journal of Mathematics*, *Journal of Mathematics of Kyoto University*, *Michigan Mathematical Journal*.

Reviewed eight proposals for the National Science Foundation.

Reviewed 39 papers for Mathematical Reviews.

Invited Talks at Professional Meetings:

- *Infinite syzygies*, 20-minute talk at the Advances in Algebra and Geometry, MSRI, Berkeley, April 2007.

- *Reverse homological algebra*, 20-minute talk at the 1024th Meeting of the AMS, Davidson College, March 2007.
- *Linear acyclic complexes*, 20-minute talk at the Winter 2006 Meeting of the Canadian Mathematical Society, Toronto, On, Canada, December 2006.
- *On the triviality of self-extensions*, 20-minute talk at the 1019th Sectional Meeting of the AMS, Salt Lake City, UT, October 2006.
- *Bounds on Betti numbers and criteria for the Gorenstein property*, 20-minute talk at the 1018th Sectional Meeting of the AMS, San Francisco, CA, April 2006.
- *Vanishing of Ext and Tor over certain local rings*, 45-minute talk at the 1011th Sectional Meeting of the AMS, Lincoln, NE, October 2005.
- *On the growth of the Bass series of a Cohen-Macaulay local ring*, 20-minute talk at the 1009th Sectional Meeting of the AMS, Annandale-on-Hudson, NY, October 2005.
- *The Grauert-Remmert normalization algorithm*, Minnowbrook Workshop on Commutative Algebra, Upstate New York, August 2005.
- *Derived DG categories and resolutions over complete intersections*, 20-minute talk at the 6th Joint International Meeting of the AMS and SMM, Houston, TX, May 2004.
- *Classes of Gorenstein rings defined via vanishing cohomology*, 20-minute talk at the 994th meeting of the AMS, Tallahassee, FL, March 2004.
- *Realizing cohomology over complete intersections*, 20-minute talk at the 987th meeting of the AMS, San Francisco, CA, May 2003.
- *Vanishing of Ext over Gorenstein rings*, 60-minute talk at the Mathematical Sciences Research Institute, Berkeley, CA, April 2003.
- *On liftable modules*, 20-minute talk at the South Central Regional Weekend Algebra Conference, Loyola University, New Orleans, LA, April 2002.
- *Vanishing of Ext and Gorenstein rings*, 20-minute talk at the 971st meeting of the AMS, Williamstown, MA, October 2001.
- *Symmetry in the Vanishing of Ext over Gorenstein rings*, 20-minute talk at the 964th meeting of the AMS, Lawrence, KS, March 2001.
- *Vanishing of (co)homology over commutative rings*, 20-minute talk at the 946th meeting of the AMS, Salt Lake City, UT, September 1999.
- *Ideals and finite projective dimension*, 20-minute talk at the 105th annual meeting of the AMS, San Antonio, TX, January 1999.
- *Intersection multiplicities and homological algebra*, 20-minute talk at the UNL Centennial Celebration, Lincoln, NE, May 1998.
- *A generalization of the Auslander-Buchsbaum formula*, 20-minute talk at the 104th annual meeting of the AMS, Baltimore, MD, January 1998.
- *Vanishing of Tor over local rings*, 20-minute talk at the 103 annual meeting of the AMS, San Diego, CA, January 1997.
- *Lifting modules and some consequences*, 20-minute talk at the 914th meeting of the AMS, Lawrenceville, NJ, October 1996.
- *Cohomological varieties, lifting and Tor on a complete intersection*, 20-minute talk at the 909th meeting of the AMS, Iowa City, IA, March 1996.

Other Professional Meetings Attended:

- Homological Conjectures in Commutative Algebra, Snowbird UT, May 2006.
- BIRS Workshop: Commutative Algebra: Homological and Birational Theory, Banff, September 2004.
- Special Year in Commutative Algebra, at the Mathematical Sciences Research Institute, Berkeley, CA, Spring 2003.
- Rowlee Lecture and Centennial Celebration of Commutative Algebra, Lincoln, NE, April 2000.
- Midwest Geometry Conference, Columbia, MO, October 1999.

- MUKUNU I, Lawrence, KS, September 1999.
- Algebra Weekend, Columbia, MO, October 1998.
- Summer School in Commutative Algebra, Centre De Recerca Matemàtica, Bellaterra, Spain, July 1996.
- NSF/CBMS regional conference, Fargo, ND, July 1995.
- Methods in Module Theory, Colorado Springs, CO, October 1993.
- Interactions Between Commutative Algebra and Algebraic Geometry, Columbia, MO, May 1993.
- Special Session in Commutative Algebra, 879th meeting of the AMS, Knoxville, TN, March 1993.
- Algebra Day, Indianapolis, IN, February, 1993.
- Midwest/Great Plains Workshop in Commutative Algebra, Lawrence, KS, May 1992.
- Special Session in Commutative Algebra, 873rd meeting of the AMS, Springfield, MO, 1992.

Selected Colloquia and Seminar Talks:

Colloquium: *From smooth to shellable: a survey of commutative Noetherian rings*, TCU, TX, September 2007.

Reverse homological algebra over some local rings, Austin, TX, March 2007.

Gorenstein rings: not so nice, Syracuse, NY, April 2005.

Non-symmetric complete resolutions and the vanishing of ..., Austin, TX, March 2005.

On constructions of unliftable modules, Arlington, TX, February 2005.

Koszul algebras, Lincoln, NE, April 2004.

Free resolutions and Hilbert's Syzygy Theorem, for $\pi\mu\epsilon$, UTA, November 2003.

Classes of Gorenstein rings, Lawrence, KS, April 2003.

On support sets of pairs of modules, Arlington, TX, April 2002.

Colloquium: *Support sets of modules over a complete intersection*, Fayetteville, AK, April 2002.

Colloquium: *The geometry of modules over a complete intersection*, Lincoln, NE, March 2002.

Symmetry in vanishing of Ext, Lawrence, KS, July 2001.

Computing support varieties, Lincoln, NE, March 2000.

Lifting modules, Lawrence, KS, January 2000.

Support varieties, Lawrence, KS, October 1999.

Commutative algebra and homological algebra, Arlington, TX, November 1998.

Intersection multiplicities, Arlington, TX, October 1998.

Ideals of finite projective dimension, Austin, TX, November 1998.

Lifting modules, Austin, TX, October 1997.

Vanishing of Tor on a complete intersection, Austin, TX, October 1996.

Other Professional Activities:

- Co-organizer, Nebraska Commutative Algebra Conference, May 7-9, 2005 (125 participants from ≥ 13 countries; operating budget: \$25,000).
- Organizer, UTA Algebra Seminar.
- Co-organizer, Special Session, 4th Annual International Joint Meeting of the AMS and the SMM (Sociedad Matematica Mexicana), Denton, TX, May 1999.
- Co-organizer, AGANT Seminar (Algebraic Geometry, Algebra, and Number Theory) between UTA-UNT-TCU, 1998-1999.

Multi-disciplinary collaborations:

- Member, **IRIS** Institute for Research in Security at the University at Texas at Arlington.

Collaborative Visits:

Toronto, CA, December 2006 (R.-O. Buchweitz)
 Lincoln, NE, August 2006 (L. Avramov, R. Wiegand)
 Lincoln, NE, May 2005 (L. Avramov, R. Wiegand)
 Syracuse, NY, April 2005 (G. Leuschke)
 KRA Workshop, Lincoln, NE, July 2004 (L. Avramov, R. Wiegand)
 L. Sega to UTA, June 2004: “*Vanishing of Ext and Tor over artinian local rings.*”
 Lincoln, NE, April 2004 (L. Avramov)
 Lincoln, NE, December 2003 (L. Avramov)
 Lawrence, KS, April 2003 (C. Huneke, D. Katz)
 Lincoln, NE, August 2002 (L. Avramov)
 Lawrence, KS, Summer 2002 (C. Huneke, D. Katz)
 Lincoln, NE, April 2002 (L. Avramov, R. Wiegand)
 Lawrence, KS, Summer 2001 (C. Huneke, D. Katz)
 Lawrence, KS, Summer 2000 (C. Huneke, D. Katz)
 Austin, TX, June 1999 (R. Heitmann)

Bibliography of Refereed Publications:

17. *On the growth of the Betti sequence of the canonical modules*, (with G. Leuschke) *Math. Z.* **256** (2007), 647–659.
16. *Asymmetric complete resolutions and vanishing of Ext over Gorenstein rings*, (with L. Şega) *Internat. Math. Res. Notices* **2005**, no. 56, (2005), 3459–3477
15. *Independence of the total reflexivity conditions for modules*, (with L. Şega) *Algebr. Represent. Theory* **9** (2006), 217–226.
14. *On tensor products of rings and extension conjectures*, *Intl. J. Comm. Rings* (to appear).
13. *Fitting ideals and finite projective dimension*, (with C. Huneke and D. Katz) *Math. Proc. Cambridge. Phil. Soc.* **138** (2005), 41–54.
12. *Nonvanishing cohomology and classes of Gorenstein rings*, (with L.Şega) *Adv. Math.* **188** (2004), 470–490.
11. *Some liftable cyclic modules*, *Comm. Alg.* **31**(1) (2003), 493–504.
10. *Symmetry in the vanishing of Ext over Gorenstein rings*, (with C. Huneke) *Math. Scand.* **93**, (2003), 161–184.
9. *Support sets of pairs of modules*, *Pacific J. Math.* **207**, No. 2 (2002), 393–409.
8. *Vanishing theorems for complete intersections*, (with C. Huneke and R. Wiegand) *J. Algebra* **238** (2001), 684–702.
7. *Vanishing of (co)homology over commutative rings*, *Comm. Alg.* **29**(5) (2001), 1883–1898.
6. *A generalization of the Auslander-Buchsbaum formula*, *J. Pure Appl. Algebra* **144** (1999), no. 2, 145–155.
5. *Existence of unliftable modules*, *Proc. Amer. Math. Soc.* **127** (1999), no. 6, 1575–1582.
4. *Tor and torsion on a complete intersection*, *J. Algebra* **195** (1997), 526–537.
3. *Complexity and Tor on a complete intersection*, *J. Algebra* **211** (1999), 578–598.
2. *Stability results for a model of repression with external control*, (with J. M. Mahaffy and R. L. Vanderheyden) *Quart. Appl. Math.* **50** (1992), no. 3, 415–435.
1. *Oscillations in a model of repression with external control*, (with J. M. Mahaffy and R. L. Vanderheyden) *J. Math. Biol.* **30** (1992), no. 7, 669–691.

Works in Progress:

1. *Finite projective dimension and the vanishing of $\text{Ext}(M, M)$* . (submitted)
2. *On acyclic complexes of free modules*. (with M. Hughes, and L. Şega) (submitted)
3. *Reverse homological algebra over some local rings*, (with L. Avramov).
4. *Formal complete intersections* (with R. Heitmann).

Teaching Activities:

- Designed the following graduate topics courses (organized courses, Math 5392):
 - Algebra and Homology.** (Fall 2007) Topics included: minimal free resolutions, Betti numbers, Poincaré series, acyclic complexes of free modules, Gorenstein dimension.
 - Cohen-Macaulay Rings.** (Spring 2005) Regular sequences, depth, dimension theory, Cohen-Macaulay rings and Modules.
 - Homological Algebra.** (Fall 2004) Topics included: projective and injective modules, category theory, Hom and tensor, complexes, derived functors: Ext and Tor.
 - Cryptography.** (Spring 2002) Topics included: elementary number theory, finite fields and quadratic residues, public key cryptography — the RSA, primality and factoring, elliptic curves.
 - Coding Theory.** (Fall 2001) Topics included: linear codes, bounds on codes, cyclic codes, codes over Z_4 , algebraic geometry codes.
- Designed the following graduate reading courses (Math 5391):
 - Acyclic Complexes.** (Spring 2007) Consisted of reading papers on the topic. Students: Meri Hughes.
 - Gorenstein Dimension.** (Spring 2007) Consisted of reading papers on the topic. Student: Meri Hughes
 - Koszul Algebras.** (Spring 2005) Consisted of reading papers on the topic. Student: Paul Stern.
 - Special Topics.** (Fall 2004) Consisted of reading papers in algebra. Student: Paul Stern.
 - Topics In Algebra.** (Spring 2004) Continued through the book *Introduction to Commutative Algebra*. Student: Neil Slagle.
 - Topics In Algebra.** (Fall 2003) Working through the book *Introduction to Commutative Algebra*. Student: Neil Slagle.
 - Topics In Algebra.** (Fall 2002) Working through the book *Topics in Algebra*. Student: Mehran Asadi.

Graduate Student Committee Member For:

William Purpura. M.S., December 2005 (expected).
Matt Summers, M.S., Spring 2004.
Michael Jamnongjit, M.S., Spring 2004.
David Smith, M.S., Spring 1999.