

## Neil Epstein

curriculum vitae

September 2011

### Personal:

Office: Universität Osnabrück, Institut für Mathematik, 49076 Osnabrück, Germany  
e-mail: [nepstein@uni-osnabrueck.de](mailto:nepstein@uni-osnabrueck.de)  
web: <http://www.home.uni-osnabrueck.de/nepstein>  
citizenship: United States of America

### Positions:

2009- DFG postdoctoral researcher, University of Osnabrueck  
2005-2009 NSF/Hildebrand Postdoctoral Assistant Professor, University of Michigan  
2005 Graduate Teaching Assistant, University of Kansas  
2004 Graduate Research Assistant, University of Kansas  
2003 Lecturer in Mathematics, University of Kansas  
2000-2002 Instructor in Mathematics (teaching assistant), University of Chicago  
1999-2000 College Fellow, University of Chicago

### Education:

2005 Ph.D. University of Kansas, Mathematics  
Advisor: Craig L. Huneke  
Dissertation: *Closure operators in commutative algebra*  
2000 M.S. University of Chicago, Mathematics  
Advisor: M. Pavaman Murthy  
1998 B.A. Swarthmore College, Mathematics and Linguistics – high honors

### Publications:

*A tight closure analogue of analytic spread*,  
Math. Proc. Cambridge Philos. Soc. 139 (2005), no. 2, 371-383  
*Phantom depth and flat base change*,  
Proc. Amer. Math. Soc. 134 (2006), 313-321.  
*Phantom depth and stable phantom exactness*,  
Trans. Amer. Math. Soc. 359 (2007), 4829-4864.  
*A length characterization of  $*$ -spread*, with Adela Vraciu,  
Osaka J. Math. 45 (2008), no. 2, 445-456.  
*Reductions and special parts of closures*,  
J. Algebra 323 (2010), no. 8, 2209-2225.  
*Noether normalization, reductions of ideals, and matroids*, with Joe Brennan  
Proc. Amer. Math. Soc. 139 (2011), no. 8, 2671-2680.  
*Criteria for flatness and injectivity*, with Yongwei Yao  
Math. Z. (2011), doi:10.1007/s00209-011-0910-y.  
*A guide to closure operations in commutative algebra*,  
to appear in the de Gruyter volume “Progress in Commutative Algebra”, 2012.  
*Some extensions of Hilbert-Kunz multiplicity*,  
with Yongwei Yao, arXiv:math.AC/1103.4730.

*Unmixed Hilbert-Kunz multiplicity*,  
with Yongwei Yao, in preparation.

*Continuous closure, axes closure, and natural closure*,  
with Mel Hochster, arXiv:math.AC/1106.3462.

*Homogeneous equational closures, tight closure, and localization*,  
with Mel Hochster, in preparation.

*Liftable integral closure*,  
with Bernd Ulrich, preprint.

*Zero-divisor graphs of nilpotent-free semigroups*,  
with Peyman Nasehpour, in preparation.

*Hilbert-Kunz multiplicity of products of ideals*,  
with Javid Validashti, in preparation.

*Special and specific parts of closures*,  
with Holger Brenner, in preparation.

*A dual to tight closure theory*,  
with Karl Schwede, in preparation.

*Pseudostar operations*, in preparation.

**Selected talks:**

Universität Osnabrück, Institut für Mathematik (Osnabrück, Germany)  
Graduiertenkolleg seminar, January 4, 2011  
*Criteria for flatness and injectivity*

Spring Southeastern sectional meeting of the AMS (Lexington, KY)  
Special Session on Commutative Algebra, March, 2010  
*Criteria for flatness and injectivity*

Universität Osnabrück, Institut für Mathematik (Osnabrück, Germany)  
Graduiertenkolleg seminar, February 10, 2010  
*Homogeneous equational tight closure*

Universität Osnabrück, Institut für Mathematik (Osnabrück, Germany)  
Graduiertenkolleg seminar, January 26, 2010  
*Some extensions of Hilbert-Kunz multiplicity*

Universität Osnabrück, Institut für Mathematik (Osnabrück, Germany)  
Graduiertenkolleg seminar, January 5, 2010  
*Generic matroids in commutative algebra*

University of Kansas (Lawrence, KS)  
Commutative algebra seminar, October 13, 2009  
*Homogeneous equational tight closure*

Purdue University (West Lafayette, IN)  
Commutative algebra seminar, September 16, 2009  
*Generic exchange properties in minimal reductions of ideals and in Noether normalizations*

Spring Central sectional meeting of the AMS (Urbana, IL)  
Special session on Local and Homological Methods in Commutative Algebra, March 29, 2009  
*A numerical criterion for tight closure of arbitrary ideals*

University of Michigan (Ann Arbor, MI)  
Commutative algebra seminar, September 18, 2008  
*Two extensions of Hilbert-Kunz multiplicity*

Annual joint meetings of the AMS-MAA (San Diego, CA)  
Special session on Progress in Commutative Algebra, January 8, 2008  
*An extension of Hilbert-Samuel and Hilbert-Kunz multiplicities to non- $m$ -primary ideals*

University of South Carolina (Columbia, SC)  
Algebra seminar, June 2007

University of Nebraska (Lincoln, NE)  
Algebra seminar, April 2007

Reed College (Portland, OR)  
Colloquium, March 29, 2007  
*Closure operations on ideals in commutative rings*

Georgia State University (Atlanta, GA)  
GSU-USC commutative algebra seminar, March 17, 2007  
*Pieces of closures*

Annual meeting of the CMS (Toronto, ON, Canada)  
Session on Commutative Algebra and Algebraic Geometry, December 9, 2006  
*Pieces of closures*

Institut de Matemàtica, Universitat de Barcelona (Barcelona, Spain)  
Winter School on Commutative Algebra, February 1, 2006  
*Closures of ideals, complements, and matroids*

University of Arkansas (Fayetteville, AR)  
30th Annual Spring Lecture Series in the Mathematical Sciences, April 15, 2005  
*Special parts of closures, and analogues of analytic spread*

Annual joint meetings of the AMS-MAA (Atlanta, GA)  
Special session on Commutative Algebra, January 5, 2005  
*A tight closure analogue of analytic spread and a “special” Briançon-Skoda theorem*

University of Nebraska (Lincoln, NE)  
Algebra seminar, October 28, 2004  
*A tight closure analogue of analytic spread*

Fall Southeastern sectional meeting of the AMS (Nashville, TN)  
Special session on Local and Homological Algebra, October 16, 2004  
*Phantom depth and stable phantom exactness*

Spring Eastern sectional meeting of the AMS (Lawrenceville, NJ)  
Special session on Commutative Algebra and Algebraic Geometry, April 18, 2004  
*A tight closure analogue of analytic spread*

University of Kansas (Lawrence, KS)  
Algebra seminar, April, 2004  
*A tight closure analogue of analytic spread*

University of Kansas (Lawrence, KS)  
Algebra seminar, July, 2003  
*Phantom depth*

**Selected other conferences and workshops attended:**

- Commutative algebra and its interactions with algebraic geometry  
CIRM, Luminy (Marseille, France): November 2-6, 2010
- School and Workshop on Local Rings and Local Study of Algebraic Varieties  
ICTP (Trieste, Italy): May 31-June 10, 2010
- Commutative Algebra and its Connections to Geometry  
Pan-American Advanced Studies Institute (Olinda, Brazil): August 3-14, 2009
- 2nd Bluegrass Algebra Conference (Lexington, KY): March 16-18, 2009
- Commutative algebra and its interactions with algebraic geometry  
CIRM, Luminy (Marseille, France): May 22-26, 2006
- AIM workshop (Palo Alto, CA): Dec 17-21, 2006
- KUMUNU 6 (Lawrence, KS): Oct. 30, 2004  
(annual joint conference of KU, MU, and NU on commutative algebra)
- University of Utah (Salt Lake City, UT), VIGRE mini-course: June 7-18, 2004  
Classical Problems in Commutative Algebra
- Purdue University (Lafayette, IN): May 17-21, 2004  
Midwest Commutative Algebra and Geometry Conference in honor of  
Joseph Lipman
- Joint AMS-SMM International Meeting (Houston, TX): May 13-16, 2004
- KUMUNU 5 (Lawrence, KS): Sept. 13, 2003
- Joint Summer Research Conference (Snowbird, UT): July 20-24, 2003  
Commutative Algebra: Presentations by Young Researchers
- MSRI (Berkeley, CA), Special Year in Commutative Algebra: Feb. 3-7, 2003  
Interactions with Homological Algebra and Representation Theory
- MSRI (Berkeley, CA), Special Year in Commutative Algebra: Dec. 2-6, 2002  
Local and Birational Theory
- Fields Institute (Toronto, ON), ICRA X, August 1-10, 2002  
International Conference on Representations of Algebras and Related Topics
- University of Michigan (Ann Arbor, MI), AMS spring sectional, March 1-3, 2002
- University of Kansas (Lawrence, KS), AMS spring sectional, March 30-31, 2001

**Service:**

- 2011     Doctoral committee member for Peyman Nasehpour
- 2010     Doctoral committee member for Axel Stäbler
- 2008-9   Organizer for the weekly Michigan commutative algebra seminar
- 2009     Ph.D. committee member for Tigran Ananyan
- 2008     Ph.D. committee member for Hannah Robbins
- 2008     Ph.D. committee member for Joseph Stubbs
- 2008     Prelim committee member for Emily Witt
- 2007     Ph.D. committee member for Christopher Mueller
- 2007     Prelim committee member for Tigran Ananyan

since 2004    referreed papers for *J. Algebra*, *Comm. Algebra*, *Proc. Amer. Math. Soc.*,  
and *Math. Proc. Cambridge Philos. Soc.*

**Affiliations and awards:**

DFG (German Research Foundation) postdoctoral grant: October 2009 – October 2012  
Research fellowship, University of Michigan: Summer 2008  
NSF Mathematical Sciences Postdoctoral Research Fellowship: Summer 2005 – Spring 2009  
Supplemental Scholarship: Spring 2005  
U.G. Mitchell Graduate Scholarship: Summer 2004

**Teaching:**

2005-2009	Assistant Professor, University of Michigan
Math 216	(Differential Equations), Winter semester, 2009
Math 216	(Differential Equations), Fall semester, 2008
Math 216	(Differential Equations), Winter semester, 2008
Math 614	(Commutative Algebra), Fall semester, 2007
Math 216	(Differential Equations), Fall semester, 2006
2004-2005	Graduate Teaching Assistant, University of Kansas
Math 122	(Calculus II), Spring semester, 2005.
2003-2004	Lecturer, University of Kansas
Math 115	(Calculus I), Fall semester, 2003.
2000-2002	Instructor, University of Chicago
Math 196	(Mathematical Methods for the Social Sciences II), Spring quarter, 2002.
Math 152	(Calculus II), Winter quarter, 2002.
Math 151	(Calculus I), Fall quarter, 2001.
Math 152	(Calculus II), Winter quarter, 2001.
Math 151	(Calculus I), Fall quarter, 2000.
1999-2000	College Fellow (student teacher), University of Chicago
Math 203-205	(Real Analysis), school year, 1999-2000.

**References:**

Craig Huneke	University of Kansas
Melvin Hochster	University of Michigan
Holger Brenner	University of Osnabrueck
Adela Vraciu	University of South Carolina
Bernd Ulrich	Purdue University
Joseph Brennan	University of Central Florida
Yongwei Yao	Georgia State University
Gavin LaRose (teaching ref)	University of Michigan