

CURRICULUM VITAE FOR HENRY K. SCHENCK

Department of Mathematics
University of Illinois
Urbana, Illinois 61801

EDUCATION

- Ph.D., Mathematics, Cornell University, 1997
- M.S., Mathematics, Cornell University, 1994
- B.S., Applied Mathematics and Computer Science, Carnegie Mellon University, 1986

PROFESSIONAL EXPERIENCE

- 2007-present University of Illinois, Associate Professor of Mathematics
- 2008 Texas A&M University, Professor of Mathematics
- 2005-2008 Texas A&M University, Associate Professor of Mathematics
- Spring 2003 MSRI, General Member
- 2001-2005 Texas A&M University, Assistant Professor of Mathematics
- 2000-2001 Harvard University, N.S.F. Postdoctoral Research Fellow
- 1998-2000 Northeastern University, N.S.F. Postdoctoral Research Fellow
- 1997-1998 Cornell University, Visiting Assistant Professor of Mathematics
- 1986-1990 Officer, United States Army. Left service as a Captain

BOOKS

1. Cox, D., Little, J., Schenck, H. "Toric varieties," 858 p., AMS Graduate Studies in Mathematics (2011).
2. Schenck, H., "Computational algebraic geometry," 193 p., Cambridge University Press (2003).

RESEARCH PUBLICATIONS

1. Schenck, H., Stillman, M. "High rank linear syzygies on low rank quadrics", *American Journal of Mathematics*, to appear.
2. Schenck, H., "Equivariant Chow cohomology of nonsimplicial toric varieties", *Transactions of the A.M.S.*, to appear.
3. Schenck, H., "Toric Hirzebruch-Riemann-Roch via Ishida's theorem on the Todd genus", *Proceedings of the A.M.S.*, to appear.
4. Schenck, H., "Hyperplane arrangements: computations and conjectures", *Advanced Studies in Pure Mathematics*, to appear.
5. Denham, G., Schenck, H., Schulze, M., Wakefield, M., Walther, U., "Local cohomology of logarithmic forms," *Annales de l'Institut Fourier*, to appear.
6. Schenck, H. "Resonance varieties via blowups of \mathbb{P}^2 and scrolls," *International Mathematics Research Notices*, **20**, 4756-4778 (2011).
7. Harbourne, B., Schenck, H., Seceleanu, A., "Inverse systems, Gelfand-Tsetlin patterns and the weak Lefschetz property," *Journal of the L.M.S.*, **84**, 712-730 (2011).
8. Schenck, H. "Euler characteristic of coherent sheaves on simplicial torics via the Stanley-Reisner ring," *Journal of Mathematical Physics*, **51**, 8 pp. (2010).
9. Schenck, H., Seceleanu, A., "The weak Lefschetz property and powers of linear forms in $K[x, y, z]$," *Proceedings of the A.M.S.*, **138**, 2335-2339 (2010).
10. Schenck, H., Tohaneanu, S., "Freeness of conic-line arrangements in \mathbb{P}^2 ," *Commentarii Mathematici Helvetici*, **84**, 235-258 (2009).
11. McDonald, T., Schenck, H., "Piecewise polynomials on polyhedral complexes," *Advances in Applied Mathematics*, **42**, 82-93 (2009).
12. Schenck, H., Tohaneanu, S., "The Orlik-Terao algebra and 2-formality," *Mathematical Research Letters*, **16**, 171-182 (2009).
13. Lima-Filho, P., Schenck, H. "Holonomy Lie algebras and the LCS formula for subarrangements of A_n ," *International Mathematics Research Notices*, **8**, 1421-1432 (2009).
14. Lima-Filho, P., Schenck, H., "Efficient computation of resonance varieties using Grassmannians," *Journal of Pure and Applied Algebra*, **213** 1606-1611 (2009).

15. Cox, D., Dickenstein, A., Schenck, H., “A case study in bigraded commutative algebra,” Lecture notes in Pure and Applied Mathematics **254** (Syzygies and Hilbert Functions; I. Peeva, ed.), 67–112 (2007).
16. Gold, L., Schenck, H., Srinivasan, H., “Betti numbers and degree bounds for some linked zero-schemes,” *Journal of Pure and Applied Algebra*, **210**, 481-491 (2007).
17. Hering, M., Schenck, H., Smith G. “Syzygies, multigraded regularity, and toric varieties”, *Compositio Mathematica*, **142**, 1499-1506 (2006).
18. Schenck, H., Suciuc, A., “Linear syzygies, Chen ranks, and the Bernstein-Gelfand-Gelfand correspondence,” *Transactions of the A.M.S.*, **358**, 2269-2289 (2006).
19. Kung, J.P.S., Schenck, H., “Derivation modules of orthogonal duals of hyperplane arrangements”, *Journal of Algebraic Combinatorics*, **24**, 253-262 (2006).
20. Little, J., Schenck, H., “Toric surface codes and Minkowski sums”, *SIAM Journal on Discrete Mathematics*, **20**, 999-1014 (2006).
21. Gold, L., Little, J., Schenck, H. “The Cayley-Bacharach theorem and evaluation codes on complete intersections,” *Journal of Pure and Applied Algebra*, **196**, 91-99 (2005).
22. Schenck, H., “Linear systems on a special rational surface,” *Mathematical Research Letters*, **11**, 697-713 (2004).
23. Schenck, H., “Lattice polygons and Green’s theorem,” *Proceedings of the A.M.S.*, **132**, 3509-3512 (2004).
24. Schenck, H., “Elementary modifications and line configurations in \mathbb{P}^2 ,” *Commentarii Mathematici Helvetici*, **78**, 447-462 (2003).
25. Cox, D., Schenck, H., “Local complete intersections in \mathbb{P}^2 and Koszul syzygies,” *Proceedings of the A.M.S.*, **131**, 2007-2014 (2003).
26. Schenck, H., Suciuc, A., “Lower central series and free resolutions of hyperplane arrangements,” *Transactions of the A.M.S.*, **354**, 3409-3433 (2002).
27. Schenck, H., Stiller, P., “Cohomology vanishing and a problem in approximation theory,” *manuscripta mathematica*, **107**, 43-58 (2002).
28. Mustață, M., Schenck, H., “The module of logarithmic p-forms of a locally free arrangement,” *Journal of Algebra*, **241**, 699–719 (2001).
29. Dalbec, J., Schenck, H., “On a conjecture of Rose,” *Journal of Pure and Applied Algebra*, **165**, 151-154 (2001).
30. Schenck, H., “A rank two vector bundle associated to a three arrangement, and its Chern polynomial,” *Advances in Mathematics*, **149**, 214–229 (2000).
31. Schenck, H., “Subalgebras of the Stanley-Reisner ring,” *Discrete and Computational Geometry*, **21**, 551–556 (1999).
32. Geramita, A., Schenck, H., “Fat points, inverse systems, and piecewise polynomial functions,” *Journal of Algebra*, **204**, 116–128 (1998).
33. Schenck, H., “A spectral sequence for splines,” *Advances in Applied Mathematics*, **19**, 183–199 (1997).
34. Schenck, H., Stillman, M., “Local cohomology of bivariate splines,” *Journal of Pure and Applied Algebra*, **117–118**, 535-548 (1997).
35. Schenck, H., Stillman, M., “A family of ideals of minimal regularity and the Hilbert series of $C^r(\hat{\Delta})$,” *Advances in Applied Mathematics*, **19**, 169–182 (1997).

AWARDS AND GRANTS

1. NSF grant (Combinatorial commutative algebra), \$159,999, 2011-2014.
2. NSA grant (Toric varieties, hyperplane arrangements, splines), \$56,150, 2011-2013.
3. UIUC Research Board (Chow cohomology of toric varieties), \$18,500 for a GRA 2010-2011.
4. NSF grant (Surface modeling, approximation theory, and coding theory), \$65,799, 2007-2010.
5. AIM conference grant (SQUARE: Arrangements, log vector fields, D-modules). 2009-2011.
6. BIRS conference grant (RIP: Cohomology Jump Loci). 2008.
7. MFO conference grant (Miniworkshop: Surface Modelling). 2007.

8. NSA grant (Applied Commutative Algebra), \$30,000, 2007-2009.
9. NSA grant (Texas Algebraic Geometry Conference and Workshop), \$15,000, 2007.
10. BIRS conference grant (FRG: Complex Arrangements). 2006.
11. NSF grant (Symbolic Computations in Algebra and Topology), \$85,427, 2003-2006.
12. ATP grant (Splines for Geometric Modeling), \$149,898, 2004-2006, (co-PI with P. Stiller).
13. NSA grant (Algebra and Combinatorics of arrangements in \mathbb{P}^2), \$25,662, 2003-2005.
14. NSF grant (CBMS conference), 2002, \$27,500, (co-PI with P. Lima-Filho, M. Rojas).
15. NSF grant (Postdoctoral Research Fellowship), \$90,000, 1998-2001.
16. MSRI Postdoctoral Research Fellowship, 1998 (declined).
17. Outstanding Service Award, Mathematics Department, Texas A&M University, 2006.
18. College of Arts and Sciences Clark Distinguished Teaching Award, Cornell University, 1997.
19. Mathematical Sciences Institute Fellowship, Cornell University, 1995.

CONFERENCE, SEMINAR AND COLLOQUIA TALKS

- Conference talks

- “From approximation theory to algebraic geometry: the ubiquity of splines” AMS Invited hour address, New Orleans, October 2012.
- “Approximation theory, spectral sequences, and splines” SIAM workshop on algebraic geometry and approximation theory, Raleigh, October 2011. (invited 25-min talk)
- “Resonance varieties via blowups of \mathbb{P}^2 and scrolls” AMS Special Session on Arrangements, Boston, April 2011. (invited 20-min talk)
- “The weak Lefschetz property and powers of linear forms” KUMUNU conference on commutative algebra, University of Nebraska, April 2011. (invited hour talk)
- “Cohomology and Chow rings of toric varieties”, BIRS workshop on Topological methods in toric/symplectic geometry and combinatorics, Banff, Canada, November 2010. (invited hour talk)
- “Linear series and linear syzygies” MFO miniworkshop on Linear series on algebraic varieties, Oberwolfach, Germany, October 2010. (invited hour talk)
- “Equivariant Chow cohomology of nonsimplicial toric varieties” Configuration Spaces: Geometry, Combinatorics and Topology, Centro de Giorgi, Pisa Italy, June 2010. (invited hour talk)
- “Blowups of \mathbb{P}^2 at singular points of line configurations: resonance, syzygies, scrolls” AMS Special Session on Combinatorial algebra, Lexington, KY, March 2010. (invited 20-min talk)
- “Equivariant Chow cohomology of nonsimplicial toric varieties” AMS Special Session on Zonotopal Algebra, San Francisco, January 2010. (invited 40-min talk)
- “Arrangements and Computations” Math Society of Japan summer school, Hokkaido, Japan, August 2009. (3 hour long invited talks)
- “Logarithmic forms for quasihomogeneous curve arrangements in \mathbb{P}^2 .” AIM squares workshop on Logarithmic forms, arrangements and D-modules, Stanford, CA, May 2009.
- “Toric specializations of the Rees algebra of Koszul cycles.” AMS special session on algebra and number theory with polyhedra, San Francisco, CA, April 2009. (invited 20-min talk)
- “Piecewise polynomials on polyhedral complexes.” Conference on algebraic geometry and approximation theory, Towson, Maryland, April 2009. (invited hour talk)

- “Geometry and Syzygies of surfaces associated to line configurations in \mathbb{P}^2 .” Bluegrass Algebra Conference, University of Kentucky, March 2009. (invited hour talk)
- “The Orlik-Terao algebra and 2-formality.” Conference in honor of Peter Orlik, Fields Institute, Toronto, Canada, August 2008. (invited hour talk)
- “Open problems in syzygies and Hilbert functions.” AMS workshop on Computational Algebra and Convexity, Snowbird, UT, June 2008. (invited hour talk)
- “Computations in topology and applied mathematics.” Conference on applications of Macaulay2, Cornell University, March 2008. (invited hour talk)
- “Algebra and Geometry of four sections of $\mathcal{O}(2, 1)$.” MFO miniworkshop on syzygies and surface modeling, Oberwolfach, Germany, November 2007. (invited hour talk)
- “A syzygy approach to projective normality.” MFO miniworkshop on projective normality of smooth toric varieties, Oberwolfach, Germany, August 2007. (invited hour talk)
- “Computational algebraic geometry and approximation theory.” IMA PI graduate workshop on Applicable Algebraic geometry, Texas A&M, July 2007. (invited 75-min talk)
- “Splines on polyhedral complexes”, BIRS workshop on Commutative algebra, Banff, Canada, June 2007. (invited 30-min talk)
- “Syzygies of plane curve singularities”, MSRI workshop on commutative algebra and algebraic geometry, Berkeley, CA, May 2007. (informal 30-min talk, invited by organizers)
- “Toric surface codes and Minkowski sums” AMS Special Session on Computational methods for low dimensional varieties, New Orleans, LA, January 2007.(invited 20-min talk)
- “A spectral sequence stratification of cohomology jump loci” AMS Special Session on Arrangements and related topics, New Orleans, LA, January 2007.(invited 20-min talk)
- “Configurations of smooth rational curves in \mathbb{P}^2 ”, BIRS workshop on Hilbert functions and Syzygies, Banff, Canada, October 2006. (invited 30-min talk)
- “Fitting ideals and cohomology jump loci”, MSRI workshop on Configuration Spaces and Arrangements, Berkeley, August 2006. (invited hour talk)
- “ R^k for a k -generic arrangement is $V(\text{ann}(\text{Ext}^{k+1}(F(A), S)))$ ”, BIRS Focussed research group on complex arrangements, Banff, Canada, June 2006. (invited hour talk)
- “Holonomy Lie algebras, Graphic Arrangements, and $\text{Tor}_i^A(k, k)_i$.” AMS Special Session on Syzygies, San Antonio, TX, January 2006.(invited 20-min talk)
- “Bigraded algebra and incomplete linear systems on $\mathbb{P}^1 \times \mathbb{P}^1$.” AMS Special Session on Resolutions, Eugene, OR, November 2005.(invited 20-min talk)
- “Projective dimension and derivations.” PIMS workshop on Hyperplane Arrangements, Vancouver, Canada August 2005. (invited 40-min talk)
- “Syzygies and Toric Varieties.” BASCOLA: Coloquio de Algebra en Buenos Aires, Argentina, August 2005. (invited 40-min talk)
- “Holonomy Lie algebras and the LCS formula for graphic arrangements.” XVI Coloquio Latinoamericano de Algebra, Uruguay, August 2005. (invited 40-minute talk)
- “A spectral sequence stratification of cohomology jump loci.” BIRS Focussed research group on cohomology and rational homotopy, Banff, Canada, June 2005. (invited hour talk)
- “Commutative and Homological methods for arrangements.” MSRI Workshop on Hyperplane Arrangements, Berkeley, August 2004. (invited hour talk)
- “Free resolutions of a family of monomial ideals and a family of ideals generated by powers of linear forms.” MFO workshop on Combinatorial Commutative Algebra, Oberwolfach, Germany, July 2004. (invited 45-min talk)
- “Chen ranks and the Bernstein-Gelfand-Gelfand correspondance.” Geometry and Combinatorics, Flagstaff, January 2004. (invited hour talk)

- “Linear systems on a special rational surface.” AMS Special Session on Algebraic Geometry, Boulder, October 2003. (invited 20-min talk)
- “Castelnuovo-Mumford regularity and line configurations in the projective plane.” AMS Special Session on Combinatorial Commutative Algebra and Algebraic Geometry, San Francisco, May 2003. (invited 20-min talk)
- “Resonance, Syzygies, and the Bernstein-Gelfand-Gelfand correspondence.” MSRI Workshop on Computational Commutative Algebra, Berkeley, March 2003. (invited hour talk)
- “Hyperplane arrangements and free resolutions.” Contemporary Algebra and Algebraic Geometry conference, Texas Tech University, November 2002. (invited 30-min talk)
- “Hyperplane arrangement cohomology and free resolutions.” Fields Institute meeting on Symbolic Computational Algebra, Ontario, Canada, July 2002. (invited 30-min talk)
- “Resonance varieties and free resolutions.” MFO miniworkshop on Cohomology jumping loci, Oberwolfach, Germany, March 2002. (invited hour talk)
- “Local complete intersections in \mathbb{P}^2 and Koszul syzygies.” AMS Special Session on Computational Algebraic Geometry, San Diego, January 2002. (invited 20-min talk)
- “Local complete intersections in \mathbb{P}^2 and Koszul syzygies.” Annapolis Algebraic Geometry conference, USNA, October 2001. (invited 40-min talk)
- “Stability and jump loci for a family of bundles on \mathbb{P}^2 .” Conference on Commutative Algebra and Algebraic Geometry, Texas A&M, May 2000. (invited hour talk)
- “Stability and jump loci for a family of bundles on \mathbb{P}^2 .” AMS Special Session on Commutative Algebra, Lowell, April 2000. (invited 20-min talk)
- “Logarithmic p-forms on a locally free arrangement.” Arrangements in Boston, Boston, June 1999. (invited 30-min talk)
- “The Chern polynomial of a three arrangement.” MSRI workshop on Symbolic Computation, Berkeley, October 1998. (invited 30-min talk) AMS Special Session on Commutative Algebra, Chicago, September 1998. (invited 20-min talk)
- “Subalgebras of the Stanley-Reisner ring.” AMS Special Session on Commutative Algebra, Montreal, September 1997. (invited 20-min talk)
- “A spectral sequence for splines.” Conference on Commutative Algebra and Combinatorics, Essen, Germany, June 1997. (invited hour talk)
- “A spectral sequence for splines.” MSRI workshop on Geometric Combinatorics, Berkeley, February 1997. (invited hour talk)
- “Homological methods in the theory of splines.” AMS Special Session on Computational Algebraic Geometry, San Diego, January 1997. (invited 20-min talk)
- “Local cohomology of bivariate splines.” Fourth International Symposium on Effective Methods in Algebraic Geometry, Eindhoven, Netherlands, June 1996. (invited 30-min talk)

- Colloquium talks

- Amherst
- Georgia
- Navy
- Nebraska
- Notre Dame
- Univ. of Illinois
- Univ. of New Hampshire
- Univ. of North Carolina - Charlotte
- Univ. of Western Illinois
- Rice
- Texas A&M
- U.T. Arlington

- Seminar talks
 - Cornell
 - Georgia
 - Harvard
 - Minnesota
 - MIT
 - Nebraska
 - Northeastern
 - Notre Dame
 - Purdue
 - Queens
 - Texas A&M
 - Univ. of California - San Deigo
 - Univ. of Illinois, Chicago
 - Univ. of Illinois
 - Univ. of Massachusetts - Amherst
 - Univ. of New Hampshire
 - Univ. of North Carolina - Charlotte
 - Univ. of Texas
 - Univ. of Wisconsin

CONFERENCE AND SEMINAR ORGANIZATION

- Organizer, Algebraic Geometry Seminar, UIUC, 2011-2012.
- Co-organizer, NSF sponsored conference on Commutative Algebra and Algebraic Geometry Seminar, UIUC, 11/2011.
- Scientific Committee, PIMS conference: “Arrangements and applications”, Vancouver, Canada, 8/2011.
- Scientific Committee, MSRI-INdAM workshop: “Toric varieties”, Cortona, Italy, 7/2011.
- Organizer, MSRI graduate student workshop: “Toric varieties”, Berkeley, CA, 6/2009.
- Organizer, AMS-NSF Math Research Community grad/postdoc workshop: “Computational Algebra and Convexity”, Snowbird, UT, 6/2008.
- Organizer, MFO Miniworkshop “Surface modelling”, Oberwolfach, Germany, 11/2007.
- Organizer, BIRS Focussed Research Group “Complex arrangements”, Banff, Canada, 6/2006.
- Organizer, Texas Algebraic Geometry Conference, Texas A&M University, 5/2006.
- Co-organizer, Texas Algebraic Geometry Conference, Rice University, 5/2005.
- Organizer, Algebra-Combinatorics Seminar, Texas A&M University, 2005-2006.
- Founder and Organizer, Graduate Student Seminar, Texas A&M University, 2004-2007.
- Organizer, CBMS conference on solving polynomial systems, Texas A&M University, 2002.
- Founder and Organizer, Graduate Student Seminar, Northeastern University, 2000.
- Organizer, Geometry-Algebra-Combinatorics Seminar, Northeastern University, 1999-2000.
- Organizer, Regional Conference on Algebra and Algebraic Geometry, Cornell University, 10/1997.

GRADUATE AND POSTDOC ADVISING

- Alexandra Seceleanu, Ph.D. 2011 (UIUC). Visiting Asst. Professor, University of Nebraska.
- Jimmy Kimball, Ph.D. 2008 (Texas A&M). Instructor at Louisiana-Lafayette.
- Stefan Tohaneanu, Ph.D. 2007 (Texas A&M). Postdoc at U. Western Ontario.
- Terry McDonald, Ph.D. 2006 (Texas A&M). Tenure-track at Midwestern State University
- Leah Gold, NSF-VIGRE postdoc, 2002-2005. Tenured at Cleveland State University
- two current Ph.D. students; current member, 5 Ph.D. committees, UIUC.
- past member, 6 Ph.D. committees (UIUC), 11 Ph.D. committees (Texas A&M).

EDITORIAL BOARD/NATIONAL COMMITTEE SERVICE

- Managing Editor, Journal of Commutative Algebra, 9/2008-present.
- Editorial Board, International Journal of Algebra and Computation, 4/2011-present.
- Member, AMS Math Research Community Advisory Board, 9/2008-present.
- Member, AMS Data Committee, 1/2006-1/2008.

DEPARTMENTAL COMMITTEE SERVICE

- Chair, Postdoctoral Search Committee, UIUC Mathematics 9/11-present.
- Member, Executive Committee, UIUC Mathematics, 9/09-9/11.
- Chair, Graduate Affairs Committee, UIUC Mathematics 1/09-9/09.
- Member, Grants Committee, UIUC Mathematics 1/09-9/09.
- Member, Graduate Affairs Committee, UIUC Mathematics 9/08-12/08.
- Member, Math 500 Comp Committee, UIUC Mathematics 9/08-9/09.
- Member, Graduate Fellowship Committee, UIUC Mathematics 9/07-9/08.
- Member, Executive Committee, Texas A&M Mathematics, 9/05-9/07.
- Member, Committee to redesign graduate algebra curriculum (Texas A&M), 9/05-9/07
- Chair, Committee to redesign engineering linear algebra (Texas A&M), fall 2006.

REFEREEING AND REVIEWING

- Panels: NSF 2003, 2004
- Individual grants: NSF, NSA, NSERC, BNF.
- Journals: Advances in Mathematics, Advances in Applied Mathematics, Algebra Number Theory, Canadian Journal of Mathematics, Commentarii Mathematici Helvetici, Compositio Mathematica, Discrete and Computational Geometry, Duke Mathematical Journal, European J. Combinatorics, Experimental Mathematics, IEEE Transactions on Information Theory, Journal of Algebra, Journal of Algebraic Combinatorics, Journal of Algebraic Geometry, Journal of the A.M.S., Journal of the L.M.S., Journal of Pure and Applied Algebra, Journal of Symbolic Computation, Mathematische Zeitschrift, Mathematics of Computation, Proceedings of the A.M.S., Proceedings of the L.M.S., SIAM J. Discrete Math, Transactions of the A.M.S.
- Books: Cambridge University Press (LMS Student Texts), Springer Verlag (LNM Series)