

# Curriculum Vitae

## GRAHAM J. LEUSCHKE

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### Employment/Education

- 2007 – today    Associate Professor, **Syracuse University**
- 2004 – 2007    Assistant Professor, **Syracuse University**
- 2003 – 2004    Post-Doctoral Fellow, **University of Toronto**
- 2000 – 2003    Assistant Professor, **University of Kansas**
  
- 2000    Ph.D.    **University of Nebraska–Lincoln**, Mathematics  
                  Advisor: Roger Wiegand  
                  Dissertation: Finite Cohen–Macaulay Type
- 1997    M.A.    **University of Nebraska–Lincoln**, Mathematics
- 1995    B.A.    **Reed College**, Portland, OR, Mathematics  
                  Advisor: V. Rao Potluri  
                  Thesis: Profinite Groups and Galois Cohomology

### Honors and Funding

- 2006 – 2009    **National Science Foundation Grant** DMS-0556181
- 2006            **AMS Travel Grant** (To attend ICM in Madrid.)
- 2004 – 2006    **National Security Agency Young Investigator Grant**
- 2003            **General Member, MSRI**
- 2000 – 2003    **NSF Mathematical Sciences Research Postdoctoral Fellowship** (Taken at the University of Kansas.)
- 2000            **Clay Liftoff Mathematician** (Sponsored for summer research by the Clay Mathematics Institute.)
- 2000            **Graduate Research Assistant Award** (UNL Alumni Association award; two given in 2000. Competition is university-wide.)
- 1999            **Graduate Research Assistant Award** (UNL College of Arts and Sciences award; two given in 1999. Competition is college-wide.)
- 1996 – 2000    **Various UNL Graduate College and Math Department fellowships** (Summer Graduate Research Assistantship, 1996; Emeritus Faculty Fellowship, 1997; Maude Hammond Fling Fellowship, 1997–1998 and 1998–1999; G.C. and W.H. Young Fellowship, 1998; John W. McDonald Endowment Fellowship, 1998–1999; Wheeler Fellowship, 1999)

### Research Interests

Commutative Algebra

Algebraic Geometry

Representation Theory

## Publications

1. *Ascent of finite Cohen–Macaulay type* (with R. Wiegand). *J. Algebra* **228** (2000), 674–681.
2. *Mixed-characteristic hypersurfaces of finite Cohen–Macaulay type*. *J. Pure Appl. Algebra* **167** (2002), 225–257.
3. *Gorenstein modules, finite index, and finite Cohen–Macaulay type*. *Comm. Alg.* **30**, no. 4 (2002), 2023–2035.
4. *Two theorems about maximal Cohen–Macaulay modules* (with C. Huneke). *Math. Ann.* **324** (2002) no. 2, 391–404.
5. *Local rings of countable Cohen–Macaulay type* (with C. Huneke). *Proc. Amer. Math. Soc.* **131** (2003), 3003–3007.
6. *The  $F$ -signature and strong  $F$ -regularity* (with I. Aberbach). *Math. Research Letters* **10** (2003), no. 1, 51–56.
7. *On a conjecture of Auslander and Reiten* (with C. Huneke). *J. Algebra* **275** (2004), no. 2, 781–790.
8. *Hypersurfaces of bounded Cohen–Macaulay type* (with R. Wiegand). *J. Pure Appl. Algebra* **201** (2005), nos. 1–3, 204–217.
9. *Local rings of bounded Cohen–Macaulay type* (with R. Wiegand). *Algebr. Represent. Theory* **8** (2005), no. 2, 225–238.
10. *Appendix: Some examples in tight closure* (Appendix to *Tight Closure Theory and Characteristic  $p$  Methods*, by Melvin Hochster.). In *Trends in Commutative Algebra*, MSRI Publications, vol. **51**.
11. *Endomorphism rings of finite global dimension*. *Canadian J. Math.* **59**, no. 2 (2007), 332–342.
12. *On the growth of the Betti sequence of the canonical module* (with D.A. Jorgensen). *Math. Zeitschrift* **256**, no. 3 (2007), 647–659. See also erratum: DOI 10.1007/s00209-008-0382-x.
13. *Factoring the adjoint and maximal Cohen–Macaulay modules over the generic determinant* (with R.-O. Buchweitz). *Amer. J. Math.* **129**, no. 4 (2007), 943–981.
14. *24 Hours of Local Cohomology: the Snowbird Notes*, (with S. Iyengar, A. Leykin, C. Miller, E. Miller, A. Singh, and U. Walther). *Graduate Studies in Mathematics*, **87**, American Mathematical Society, Providence RI, 2007. xviii+281.

## In Progress

15. *Non-commutative desingularization of determinantal varieties I and II* (with R.-O. Buchweitz and M. Van den Bergh).
16. *Semidualizing modules and Gorenstein presentations* (with D. Jorgensen and S. Sather-Wagstaff).
17. *Cohen–Macaulay Representation Theory* (with R. Wiegand), a graduate textbook.

**Selected Recent Invited Lectures**

- 2008 Dec. CMS Special Session, Ottawa ON: “Semidualizing modules and Gorenstein presentations”
- Oct. Route 81 #18, Kingston ON: “What should a non-commutative desingularization be?”
- Sep. Conference on interactions between representation theory and commutative algebra, Barcelona: “Non-commutative desingularization of determinantal varieties”
- Sep. Colloquium, University of Nebraska: “What is a non-commutative desingularization?”
- Mar. International Conference on Commutative Algebra, Yokohama Japan: “Non-commutative desingularizations of determinantal varieties”
- 2007 Oct. AMS Special Session, Rutgers NJ: “Non-commutative desingularization of the generic determinant”
- Mar. Colloquium, Georgia State University: “Factoring the adjoint and modules over the generic determinant”
- Jan. AMS Special Session, New Orleans LA: “Non-commutative desingularization of the generic determinant”
- 2006 Nov. First Kent Regional Algebra Weekend, Kent OH: “Factoring the adjoint and modules over the generic determinant”
- Sep. Joint meeting of the Canadian and Mexican Mathematical Societies, Guanajuato Mexico: “Non-commutative desingularization of the generic determinant”
- Aug. Fields Institute Workshop on Computational and Combinatorial Commutative Algebra, Toronto: “Non-commutative desingularization of the generic determinant”
- Apr. 32nd Annual New York State Regional Graduate Mathematics Conference, Syracuse: “Coxeter-Dynkin diagrams: A, D, and E”
- Apr. AMS Special Session, San Francisco CA: “Non-commutative desingularization of the generic determinant”
- Feb. Algebraic Geometry Seminar, Queen’s University: “Non-commutative desingularization of the generic determinant”
- 2005 Oct. AMS Special Session, Lincoln NE: “Cohen–Macaulay endomorphism rings”
- Jun. Joint Summer Research Conference, Snowbird UT: 4 Lectures on Local Cohomology
- Apr. Oberwolfach lecture, MFO: “Factoring the adjoint and MCM modules”
- Apr. AMS Special Session, Santa Barbara CA: “Factoring the adjoint and modules over the generic determinant”
- Jan. Colloquium, University of Nebraska–Lincoln: “Factoring the adjoint and modules over the generic determinant”
- Jan. AMS Special Session, Atlanta: “Factoring the adjoint and maximal Cohen–Macaulay modules over the generic determinant”
- 2004 Dec. CMS Special Session, Montréal: “Endomorphism rings of finite global dimension”
- Sep. Workshop on Commutative Algebra, Banff International Research Station: “Factoring the adjoint and maximal Cohen–Macaulay modules over the generic determinant”
- May School on Commutative Algebra and Interactions with Algebraic Geometry and Combinatorics, Trieste: “Endomorphism rings of finite global dimension”
- Apr. AMS Special Session, Los Angeles: “Endomorphism rings of finite global dimension”
- 2003 Dec. International Conference on Commutative Algebra and Combinatorics, Allahabad, India: “Bounded Cohen–Macaulay Type”
- July Joint Summer Research Conference, “Commutative Algebra: Presentations by Young Researchers”, Snowbird UT: “Local Rings of bounded Cohen–Macaulay type”
- May AMS Special Session, San Francisco: “On a Conjecture of Auslander and Reiten”

**Teaching**

- 2004 – today **Syracuse University**  
 — Elements of Modern Mathematics, Calculus I, Calculus II, Calculus III,  
 Differential Equations, Graduate Algebra I, Graduate Algebra II,  
 Homological Algebra, Linear Algebra, Combinatorial Commutative Algebra
- 2003 – 2004 **University of Toronto**  
 — Calculus! for science majors
- 2000 – 2003 **University of Kansas**  
 — Calculus I, Elementary Statistics, advanced graduate course in Algebra
- 1995 – 2000 **University of Nebraska–Lincoln**  
 — Precalculus, Trigonometry, Intermediate Algebra, Calculus I for business majors

**Service to Department/College**

- 2007 – 2008 **Curriculum Committee**, College of Arts and Sciences
- 2006 – 2008 **Undergraduate Committee**, Mathematics Department
- 2005 – 2006 **Departmental liaison**, redesign of Mathematics Department web site

**Other Professional Activities**

- since 2007 **Associate Editor** of *Journal of Commutative Algebra* (formerly *International Journal of Commutative Rings*).
- since 2007 **Organizing Committee** for Café Scientifique Syracuse, a forum for debating the latest ideas in science and technology.
- since 2001 **Founder, Designer and Webmaster** (with M. McDermott and S. Sather-Wagstaff), <http://www.commalg.org>, a website for the commutative algebra community, including conference announcements, news and links of interest to commutative algebraists.
- 2006 Dec. **Organizer** (with R.-O. Buchweitz and G.G. Smith), CMS Special Session on Commutative Algebra and Algebraic Geometry, Toronto ON.
- 2006 Sept. **Organizer** (with S.P. Diaz and C. Miller), Nth Annual Route 81 Conference on Algebraic Geometry and Commutative Algebra, Syracuse NY.
- 2005 Aug. **Organizer** (with S. Iyengar, C. Miller, and A. Singh), Minnowbrook Workshop on Commutative Algebra, Minnowbrook Adirondack Conference Center, Syracuse NY. Funded by Syracuse University and the National Security Agency.
- 2004 May **Organizer** (with S. Iyengar), AMS Special Session on Commutative Algebra, Houston TX.
- 2001 Oct. **Organizer** (with S. Loepp), AMS Special Session on Commutative Algebra, Williamstown MA.
- Referee** for *Acta Mathematica Sinica*, *Advances in Mathematics*, *American Journal of Mathematics*, *Communications in Algebra*, *Geometriae Dedicata*, *Illinois Journal of Mathematics*, *Journal of Algebra*, *Mathematica Scandinavica*, *Mathematical Research Letters*, *Mathematische Zeitschrift*, *Nagoya Mathematics Journal*, *Pacific Journal of Mathematics*, *Proceedings of the American Mathematical Society*, *Rocky Mountain Journal of Mathematics*, and *Transformation Groups*

**Reviewer** for numerous NSF proposals

**Reviewer** of 20 papers for *Mathematical Reviews*