

## CURRICULUM VITAE

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### ADMINISTRATIVE ROLES AT LAFAYETTE COLLEGE

Dean of the Faculty	January–Present
Interim Dean of the Faculty	September–December 2018
Dean of Academic Initiatives	July–August 2018
Dean of the Curriculum and Resources	2014–2015
Associate Provost for Faculty Development and Research Services	2010–2014
Director of Research Services	2006–2007

### FACULTY POSITIONS

#### At Lafayette College

David M. '70 and Linda Roth Professor of Mathematics	2017–Present
Professor of Mathematics	2004–2017
Associate Professor of Mathematics	1999–2004
Assistant Professor of Mathematics	1992–1999

#### Visiting Appointments

The University of Pennsylvania	2015–2016
The Mathematical Sciences Research Institute, Berkeley	Fall 2007
The University of California at Santa Barbara	Winter 2004
Barnard College/Columbia University	Fall 2003
The Ohio State University	Spring 2001
Binghamton University	Fall 2000
Cornell University	1996–1997

### EDUCATION

Ph.D. (Mathematics) Cornell University	1992
Master of Science (Mathematics) Cornell University	1990
Bachelor of Arts (Mathematics) The University of Virginia	1987

### CONTINUING EDUCATION RELATED TO ADMINISTRATION

Society for College and University Planning (SCUP) Planning Institutes, I & II	2013
Harvard Institutes for Higher Education: Management Development Program	2012

## ACADEMIC AWARDS AND HONORS

James Crawford Award for excellence in teaching, the EPaDel section of the Mathematics Association of America	2010
Mary Louise Van Artsdalen Prize, for outstanding scholarly achievement, Lafayette College	2007
Sigma Xi Distinguished Lecturer	2005–2007
Thomas Roy and Lura Forrest Jones Award for distinguished teaching and research, Lafayette College	2003
The Jones Lecture Award for distinguished teaching and scholarship, Lafayette College	1999
Student government award for outstanding teaching, Lafayette College	1994
Clark award for distinguished teaching, Cornell University	1992

## SELECTED SERVICE AT LAFAYETTE

*I have served on most of Lafayette's elected faculty committees as well as many appointed committees. Below are selected, recent examples of committee assignments. My service on elected faculty committees in 2010–2015 and 2018–19 was ex officio.*

### Elected Faculty Committees

Academic Research Committee	2001–2007, 2010–2015
Curriculum and Educational Policy Committee	1997–2000, 2004–2007, 2014–2015, 2018–Present
Diversity Committee	2018–Present
Faculty Academic Policy Committee	2018–Present
Faculty Compensation Committee	2014–2015
Governance Committee	2018–Present
Promotion, Tenure and Review Committee	2007–2010, 2016–2018
with an appointment to the Staffing Advisory Committee	2016–2018
Student Appeals	2010–2015
Teaching and Learning Committee	1994–1996, 1997–2000, 2010–2015, 2018–Present

### Committees of Lafayette's Board of Trustees

Executive Committee	2018–Present
Educational Policy Committee	2010–2015, 2018–Present
External Affairs Committee	2004–2006

### Search Committees

*I have been a member of dozens of search committees, several as the chair. Some recent searches are listed below.*

Search for the inaugural Director of the Arts	2013
Search for Lafayette's Provost	2014
Search for Lafayette's Associate Vice President of Finance	2015

## President or Provost Appointed Committees

Arts Advisory Committee	2012–2015
Budget Advisory Committee	2014–2015
Campus Climate Working Group	2010–2011
Center for Community Engagement Advisory Board	1995–2000, 2014–2015
Curriculum Innovation Task Force	2013–2014
Health Professions Advisory Board	2004–2007, 2010–2015
Human Subjects Institutional Review Board	2004–2007, 2010–2015
Institutional Animal Care and Use Committee	2004–2007, 2010–2015
Off Campus Study Advisory Board	2004–2006
Student Learning Assessment Committee	2014–2015

## COMMITTEE SERVICE IN MATHEMATICS

### Committees of the American Mathematical Society:

Centennial Fellowship Committee	2007–2008
Eastern Section Program Committee, chair in 2011	2010–2011

### Committees of the Mathematics Association of America:

Executive Committee of the EPaDel (Philadelphia area) section	2001–2006
President of EPaDel	2006–2007
Merton Hasse Prize Committee	2012–2016
Instructional Practices Guide Team	2016–2017

## PROFESSIONAL SERVICE

Editorial Board for the Cambridge Mathematical Textbooks series (2014–present)

Referee for dozens of professional journals including: the *Annals of Mathematics*, *Commentarii Mathematici Helvetici*, *Geometry and Topology*, *Inventiones Mathematicae*, *Journal of Algebra*, *Topology*, and the *Transactions of the American Mathematical Society*.

Reviewer and review panelist for the NSF (multiple years)

External Review Committee for the Mathematics Department at:

Bates College (chair)	2013
Gettysburg College	2015

## EXTERNAL GRANTS AND FELLOWSHIPS RELATED TO MY RESEARCH

Co-PI for National Science Foundation grant to support the <i>Approaches to Group Theory</i> conference (which I co-organized)	2010–2011
Research Membership providing travel and housing support from the Mathematical Sciences Research Institute in Berkeley, California	2007
Centennial Research Fellowship from the American Mathematical Society	2003–2004
Co-PI for two NSF REU grants	2000–2005
Principal Investigator for an NSF Research Grant	1997–1999

## PUBLICATIONS

### BOOKS

Exploring Mathematics: An Engaging Introduction to Proof (with Derek Smith), Cambridge University Press, 2017.

Groups, Graphs and Trees: An Introduction to the Geometry of Infinite Groups, Vol. 73 in the LMS Student Texts series, Cambridge University Press, 2008.

Writing in the Teaching and Learning of Mathematics (with Thomas Rishel), Vol. 48 in the MAA Notes Series, the Mathematics Association of America, 1998.

### JOURNAL ARTICLES (Research Mathematics)

*In the following list of articles, undergraduate coauthors are indicated with an asterisk.*

1. Persistent homology and random models of the Gaussian primes (with C. Hammarsten, R. Helmreich\*, A. Krishnan, and N. Schmitz\*), submitted.
2. The BNS-invariant for the pure braid groups (with N. Koban and J. McCammond), *Groups, Geometry and Dynamics* **9** (2015) 665–682.
3. Connectivity at infinity for braid groups on complete graphs (with L. Zhang\*), *Homology, Homotopy and Applications* **15** (2013) 303–311.
4. Complete growth series and products of groups (with D. Allen\*, M. Cream\*, K. Finlay\*, and R. Rohatgi\*), *New York Journal of Mathematics* **17** (2011) 321–329.
5. The compactly supported cohomology of buildings (with M.W. Davis, J. Dymara, T. Januszkiewicz and B. Okun), *Commentarii Mathematici Helvetici* **85** (2010) 379–395.
6. The cohomology groups of the outer Whitehead automorphism group of a free product (with E. Berkove), *Forum Mathematicum* **22** (2010) 379–395.
7. The geometry of the Dehn complex for a spatial graph (with D. Glasser\*, L. McDonnell\*, K. Penderghest\* and M. Vacha\*), *Journal of Knot Theory and its Ramifications* **18** (2009) 1175–1191
8. The Euler characteristic of the Whitehead automorphism group of a free product (with C. Jensen and J. McCammond), *Transactions of the American Mathematical Society* **359** (2007) 2577–2595.
9. The integral cohomology of the group of loops (with C. Jensen and J. McCammond), *Geometry and Topology* **10** (2006) 759–784.
10. The cohomology of right angled Artin groups with group ring coefficients (with C. Jensen), *Bulletin of the London Mathematical Society* **37** (2005) 711–718.
11. The language of geodesics for Garside groups (with R. Charney), *Mathematische Zeitschrift* **248** (2004) 495–509.
12. Bestvina’s normal form complex and the homology of Garside groups (with R. Charney and K. Whittlesey), *Geometriae Dedicata* **105** (2004) 171–188.
13. The hypertree poset and the  $L^2$  Betti numbers of the motion group of the trivial link

- (with J. McCammond), *Mathematische Annalen* **328** (2004) 633–652.
14. Bounding edge degrees in triangulated 3-manifolds (with N. Brady and J. McCammond), *Proceedings of the American Mathematical Society* **132** (2004) 291–298.
  15. Combinatorial conditions that imply word hyperbolicity for 3-manifolds (with M. Elder and J. McCammond), *Topology* **42** (2003) 1241–1259.
  16. Reflection groups and CAT(0) complexes with exotic local structures (with M.W. Davis), *High dimensional manifold topology*, (eds. F.T. Farrell and W. Luck), World Scientific (2003) 151–158.
  17. Local-to-asymptotic topology for cocompact CAT(0) complexes (with N. Brady and J. McCammond), *Topology and its Applications* **131** (2003) 177–188.
  18. The topology at infinity of Coxeter groups and buildings (with M. W. Davis), *Commentarii Mathematici Helvetici* **77** (2002) 746–766.
  19. Graph products and Cannon pairs (with J. Loeffler\* and J. Worthington\*), *International Journal of Algebra and Computation* **12** (2002) 747–754.
  20. The pure symmetric automorphisms of a free group form a duality group (with N. Brady, J. McCammond and A. Miller), *Journal of Algebra* **246** (2001) 881–896.
  21. Automatic groups, rational growth, and polygonal amalgams (with S. Grettum\*, J. Mandelson\* and P. Rhodes\*), *Communications in Algebra* **29** (2001) 5371–5382.
  22. Measuring the tameness of almost convex groups (with S. Hermiller), *Transactions of the American Mathematical Society* **353** (2001) 943–962.
  23. Connectivity at infinity for right angled Artin groups (with N. Brady), *Transactions of the American Mathematical Society* **353** (2001) 117–132.
  24. On the  $\Sigma$ -invariants of Artin groups (with H. Meinert and L. VanWyk), *Topology and its Applications* **110** (2001) 71–81.
  25. Improper actions and higher connectivity at infinity (with K. Brown), *Commentarii Mathematici Helvetici* **75** (2000) 171–188.
  26. On the  $\Sigma^2$ -invariants for graph products of indicable groups (with H. Meinert and L. VanWyk), *Topology and its Applications* **99** (1999) 41–65.
  27. Artin groups, Rewriting Systems and Three-Manifolds (with S. Hermiller), *Journal of Pure and Applied Algebra* **136** (1999) 141–156.
  28. Higher generation subgroup sets and the  $\Sigma$ -invariants of graph groups (with H. Meinert and L. VanWyk), *Commentarii Mathematici Helvetica* **73** (1998) 22–44.
  29. Using weighted Whitehead graphs to compute the  $\Sigma^1$ -invariants of infinite groups (with S. Garille\*), *International Journal of Algebra and Computation* **8** (1998) 23–34.
  30. Tame combings, almost convexity and rewriting systems for groups (with S. Hermiller), *Mathematische Zeitschrift* **225** (1997) 263–276.
  31. Geometric invariants for Artin groups, *Proceedings of the London Mathematical Society* (3) **74** (1997) 151–173.
  32. Finiteness properties and abelian quotients of graph groups (with H. Meinert and L. VanWyk), *Mathematical Research Letters* **3** (1996) 779–785.

33. When is the Graph Product of Hyperbolic Groups Hyperbolic?, *Geometriae Dedicata* **61** (1996) 29–41.
34. Abelian quotients of Artin groups (with L. McKinney\* and K. Schnare\*), *Houston Journal of Mathematics* **21** (1995) 659–670.
35. The Bieri-Neumann-Strebel invariants for graph groups (with L. VanWyk), *Proceedings of the London Mathematical Society* (3) **71** (1995) 263–280.
36. Algorithms and geometry for graph products of groups (with S. Hermiller), *Journal of Algebra* **171** (1995) 230–257.
37. The topology of graph products of groups, *Proceedings of the Edinburgh Mathematical Society* **37** (1994) 539–544.
38. Hopfnicity of negatively curved polygonal amalgams of finite groups, *Journal of Pure and Applied Algebra* **94** (1994) 331–340.
39. Automorphisms of negatively-curved polygonal amalgams, *Michigan Mathematics Journal* **41** (1994) 121–134.
40. The geometry of  $\mathrm{PSL}(2, \mathbb{Z}[\omega])$  automorphisms, in Infinite groups and group rings: Proceedings of the AMS Special Session, Tuscaloosa, 13-14 March 1992, (Corson, Dixon, Evans and Röhl, eds.) Series in Algebra, Vol 1, World Scientific, Singapore (1993) 69–76.
41. Endomorphisms of discrete groups acting chamber transitively on affine buildings, *International Journal of Algebra and Computation* **3** (1993) 357–364.

#### EXPOSITORY AND PEDAGOGICAL ARTICLES

42. The MAA Instructional Practices Guide (I was one of over thirty contributing authors), Mathematics Association of America Press, 2017.
43. The Ends of Groups (with N. Koban), in *Office Hours with a Geometric Group Theorist*, Matt Clay and Dan Margalit, eds, Princeton University Press (2017) 199–214.
44. Review of: *The geometry and topology of Coxeter groups* by Michael W. Davis and *Topological methods in group theory* by Ross Geoghegan. In *Bulletin of the American Mathematical Society* **50** (2013) 347–352.
45. The growth of trees (with P. Hotchkiss), *The College Mathematics Journal* **35** (2004) 143–151.
46. Introducing the hyperbolic plane with piecewise Euclidean geometry (with J. Benashaski\*, K. O’Brien\*, P. Reinheimer\* and M. Skarbek\*), *The College Mathematics Journal* **31** (2000) 213–217.
47. Review of: *The Social Life of Numbers* by Gary Urton (with T. Thorme), *The American Mathematical Monthly* **106** (1999) 275–279.
48. Plotting Pots: Archaeological Exercises in Introductory Calculus (with Trisha Thorme), *PRIMUS* **VII** (1997) 129–140.
49. Visualizing the geometry of Lissajous knots (with J. Wolfson\*), *The College Mathematics Journal* **28** (1997) 211–216.

50. Fractal representations of Cayley graphs (with C. Reiter), *Computers and Graphics* **20** (1996) 163-170.
51. Don't just tell me what your computer told you, *PRIMUS V* (1995) 1-22.
52. I'd like a function with a view of the lake, *PRIMUS IV* (1994) 185-191.

#### SELECTED PRESENTATIONS

*I have given over one hundred conference presentations, colloquia, and seminars. The following list is intended to indicate the diversity of topics and venues for these presentations.*

“Connectivity at infinity for right angled Artin groups,” plenary talk at the Albany Group Theory Conference (10/97)

“Writing and the teaching of mathematics” Mini-Course taught with Tom Rishel at the Joint AMS-MAA meeting in San Antonio (1/99)

“Adding the words: Using writing to teach mathematics” Workshops for Project NExT fellows at MathFest Meetings: Providence ('99), Madison ('01), Burlington ('02), Boulder ('03), Providence ('04), Knoxville ('06), Madison ('08), and Lexington ('11).

“Duality and improper actions on posets” Mathematisches Forschungsinstitut Oberwolfach (Germany) (1/01)

“Asymptotic cohomology for the motion group of the trivial  $n$ -component link” plenary talk at the Cornell Topology Festival, Ithaca (5/03)

“The many faces of Thompson's group  $F$ ” and “The many friends of Thompson's group  $F$ ” a course at Atelier Autor des Groupes de Thompson, Normandy, France (9/04)

“Mathematics and Writing Across the Curriculum” the Provost's Brownbag on Leadership in Education, University of Rochester (2/05)

“Embeddability: How Plasticman got me interested in topology” a Sigma Xi Distinguished Lecture, given at Ursinus (9/06), Bucknell (11/06) and Gettysburg (10/07).

“Euler, Graphs, and Surfaces” the Guterman Lecture at Tufts University (3/11)

“Simple Machines, Thurston Paper, and Hyperbolic Geometry” the Christie Lecture at Bowdoin College (4/15)

“Building Resources and Building Connections: Cross-Institutional Collaboration on Blended Learning” a panel presentation at the annual AAC&U meeting, Washington DC (1/16)

“ $\Sigma$ -invariants and the lower central series of Torelli-type groups” seminar at the Institute for Advanced Studies, Princeton (12/17)

“Just-In-Time Mathematics Support Using Online Modules: Findings from a Multi-Institutional Project” MathFest, Denver (8/18)

“Topology at infinity and robot motion planning” colloquium at SUNY-Albany (1/19)