

Gene Freudenburg

Curriculum Vitae, February 2010

Chair, Department of Mathematics
Professor of Mathematics
Western Michigan University

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1 Education

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| Washington University, Saint Louis | Mathematics | Ph.D. 1992 |
| Saint Louis University | Mathematics | M.S. 1986 |
| Valparaiso University | Interdisciplinary | B.A. 1982 |

2 Appointments

Western Michigan University

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| 2006-present | Chair, Department of Mathematics |
| 2006-present | Professor of Mathematics |

University of Southern Indiana

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| 2005-2006 | Associate Dean, Pott College of Science & Engineering |
| 2005-2006 | Professor of Mathematics |
| 1999-2005 | Associate Professor of Mathematics |
| 1995-1999 | Assistant Professor of Mathematics |

Ball State University

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| 1992-1995 | Assistant Professor of Mathematics |
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3 Research Interests

Commutative algebra and algebraic geometry; algebraic automorphisms of affine varieties; derivations of polynomial rings; algebraic group actions; invariant theory (MSC numbers 13, 14)

4 Grants

Agency: US National Science Foundation, Division of Math. Sciences
Project Title: *Algebraic Automorphisms of Affine Space*
Principal Investigator: G. Freudentburg
Award Amount: \$61,275
Award Number: DMS 0101836
Dates: September 2001 to August 2005

5 Books

G. Freudentburg, *Algebraic Theory of Locally Nilpotent Derivations*
Encyclopaedia of Mathematical Sciences
Invariant Theory and Algebraic Transformation Groups, Volume VII
R. V. Gamkrelidze, V. L. Popov, Subseries Editors
Springer Verlag (Berlin, Heidelberg, New York) 2006, 261 pages

6 Awards

2004 Distinguished Professor, University of Southern Indiana

“The Distinguished Professor Award recognizes a university faculty member for excellence in teaching, scholarship, and service as well as those intangible personal qualities which inspire others. This award is the highest recognition bestowed upon a faculty member at the University of Southern Indiana.” (From the Award Description)

7 Doctoral Thesis

On the Automorphism Group of the Polynomial Ring in Three Variables, Washington University in Saint Louis, 1992. David L. Wright, Advisor

8 Research Articles

- [21] G. Freudentburg, *Bivariate analogues of Chebyshev polynomials with application to embeddings of affine spaces*, CRM Proceedings and Lecture Notes, Centre de Recherches Mathématiques, Montreal (to appear)
- [20] D. Daigle, G. Freudentburg, *Families of affine fibrations*, in: Symmetry and Spaces, In Honor of Gerry Schwarz, 35-44, Progress in Mathematics **278**, Birkhäuser, Boston, 2010
- [19] G. Freudentburg, *Derivations of $R[X, Y, Z]$ with a slice*, J. Algebra **322** (2009) 3078-3087
- [18] G. Freudentburg, *A linear counterexample to Hilbert’s Fourteenth Problem in dimension eleven*, Proc. Amer. Math. Soc. **135** (2007) 51-57

- [17] G. Freudenburg, *Vénéreau polynomials relative to \mathbb{C}^* -vector bundles and stable coordinates*, in: *Affine Algebraic Geometry*, 203-215, Osaka University Press, Osaka, 2007
- [16] G. Freudenburg, L. Moser-Jauslin, *Real and rational forms of certain $O_2(\mathbb{C})$ -actions, and a solution to the Weak Complexification Problem*, *Transform. Groups* **9** (2004) 257-272
- [15] G. Freudenburg, L. Moser-Jauslin, *Embeddings of Danielewski surfaces*, *Math. Z.* **245** (2003) 823-834
- [14] G. Freudenburg, L. Moser-Jauslin, *A non-linearizable S_3 -action on \mathbb{C}^4* , *Annals Fourier Inst.* **52** (2002) 133-143
- [13] G. Freudenburg, *A survey of counterexamples to Hilbert's Fourteenth Problem*, *Serdica* **27** (2001) 171-192
- [12] D. Daigle, G. Freudenburg, *Triangular derivations of $k[X_1, X_2, X_3, X_4]$* , *J. Algebra* **241** (2001) 328-339
- [11] G. Freudenburg, *Recent progress on Hilbert's Fourteenth Problem via triangular derivations*, *Ann. Polon. Math.* **76** (2001) 95-99
- [10] D. Daigle, G. Freudenburg, *A note on triangular derivations of $k[X_1, X_2, X_3, X_4]$* , *Proc. Amer. Math. Soc.* **129** (2000) 657-662
- [9] G. Freudenburg, *A counterexample to Hilbert's Fourteenth Problem in dimension six*, *Transform. Groups* **5** (2000) 61-71
- [8] D. Daigle, G. Freudenburg, *A counterexample to Hilbert's Fourteenth Problem in dimension five*, *J. Algebra* **221** (1999) 528-535
- [7] D. Daigle, G. Freudenburg, *Locally nilpotent derivations over a UFD and an application to rank two locally nilpotent derivations of $k[X_1, \dots, X_n]$* , *J. Algebra* **204** (1998) 353-371
- [6] G. Freudenburg, *Actions of G_a on \mathbb{A}^3 defined by homogeneous derivations*, *J. Pure Appl. Algebra* **126** (1998) 169-181
- [5] G. Freudenburg, *Local slice constructions in $k[X, Y, Z]$* , *Osaka J. Math.* **34** (1997) 757-767
- [4] G. Freudenburg, *A note on the kernel of a locally nilpotent derivation*, *Proc. Amer. Math. Soc.* **124** (1996) 27-29
- [3] G. Freudenburg, *Triangulability criteria for additive group actions on affine space*, *J. Pure Appl. Algebra* **105** (1995) 267-275
- [2] G. Freudenburg, *One-parameter subgroups and the triangular subgroup of the affine Cremona group*, *Automorphisms of Affine Spaces* (Curacao, 1994), 201-213, Kluwer Acad. Publ., Dordrecht, 1995
- [1] G. Freudenburg, *Three-dimensional analogues of the Nagata surfaces* *Comm. Algebra* **23** (1995) 139-164

9 Visiting Appointments

Universite de Bourgogne, Department of Mathematics
Dijon, France, June 2003 and June 2009
Host: L. Moser-Jauslin

Universität Basel, Department of Mathematics
Basel, Switzerland, June 2001
Host: H. Kraft

10 Selected Talks

The Vénéreau polynomials relative to \mathbf{C}^ -fibrations and stable coordinates*
Symmetry and Spaces: 60th Birthday Conference for Gerry Schwarz
Fields Institute, University of Toronto
Toronto, Canada (10-14 July 2006)

Sounding the Depths of Hilbert's 14th Problem
First Joint AMS-Taiwanese Mathematical Society Meeting
Special Session on Affine Algebraic Geometry
Taichung, Taiwan (12-18 December 2005)

Embeddings of Danielewski surfaces
Workshop on Algebraic Transformation Groups, Universität Basel
Basel, Switzerland (24 June 2003)

Embeddings of Danielewski surfaces
Joint AMS-RSME Meeting, Special Session on Affine Algebraic Geometry
Seville, Spain (20 June 2003)

Algebraic Automorphisms of \mathbb{C}^n
Algebra Seminar, Universite de Bourgogne
Dijon, France (11 June 2003)

Polynomial Automorphisms
Algebra Seminar, Catholic University Nijmegen
Nijmegen, The Netherlands (20 March 2002)

Asanuma's Non-Linearizable Torus Actions and the Cancellation Problem
Group Actions on Rational Varieties, Centre Recherche Mathematique
Montreal, Canada (27 February 2002)

Counterexamples to Hilbert's 14th Problem
Mathematics Lecture, Universität Basel
Basel, Switzerland (29 June 2001)

A Non-Linearizable Action of S_3 on \mathbb{C}^4
Algebra Seminar, Universität Freiburg
Freiburg, Germany (22 June 2001)

11 Workshops

EAGER 26th Autumn School in Algebraic Geometry
“ \mathbb{C}^+ Actions on Affine Spaces and Locally Nilpotent Derivations”
Łukęcin, Poland, Sept. 14-20, 2003
Lecturers: D. Daigle and G. Freudenburg
Organized by M Koras and J. Buczynski,
Institute of Mathematics, Warsaw University

12 Professional Service

Referee work

Journal of Algebra, Journal of Algebraic Geometry, Journal of Pure and Applied Algebra, Transformation Groups, Communications in Algebra, Linear Algebra and Its Applications, Applied Mathematical Letters, American Mathematical Monthly

Review Work

Articles. Article reviewer for *Mathematical Reviews* (since 1996) and *Zentralblatt Mathematik* (since 2001)

Grant Proposals. Reviewer for U.S *National Science Foundation* and Dutch *National Organization for Scientific Research*

Books. Book review, *American Mathematical Monthly* 103 (1996)

Conference Organization

Special Session: *Geometry of Affine Space*
931st Meeting of the American Mathematical Society
University of Louisville, March 1998
Organizers: G. Freudenburg and D.L. Wright

13 Research References

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| Hyman Bass | Professor, University of Michigan |
| Arno van den Essen | Professor, University of Nijmegen |
| Hanspeter Kraft | Professor, University of Basel |
| Paul C. Roberts | Professor, University of Utah |
| K. Peter Russell | Professor, McGill University |
| David L. Wright | Professor and Mathematics Department Chair, Washington University |

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