

Curriculum Vita

Darrin Frey

Office Address

Department of Science and Mathematics
Cedarville University
Cedarville, OH 45314
(937) 766-7643
e-mail: freyd@cedarville.edu

Education

Ph.D. in Mathematics, University of Michigan, April, 1995

Thesis Title: *Conjugacy of Alternating Groups of Degree 5 and $SL(2, 5)$ Subgroups of the Complex Lie Group of Type E_8 .*

Thesis advisor: Robert L. Griess, Jr.

Research interests: Finite perfect groups, exceptional complex Lie groups. AMS codes 20, 22

B.S. in Mathematics with High Distinction, University of Nebraska, 1989

Undergraduate Thesis Title: *Conjugation in Inverse Semigroups*

Professional Experience

August 2009 - Present

Cedarville University - Professor of Mathematics

August 2003 - Present

Cedarville University - Associate Professor of Mathematics

August 1997 - August 2003

Cedarville University - Assistant Professor of Mathematics

Courses Taught: Calculus I, II, III, Business Calculus

Differential Equations

Precalculus

Abstract Algebra I, II,

Topology

Combinatorics

Algebraic Structures for Secondary Ed Majors

Euclidean and Non-Euclidean Geometries

Logic and Methods of Proof

Intro to Math

Capstone Experience: Error-Correcting Codes

Beautiful Math

Topics in Math: Character Theory of Finite Groups

Independent Study: Lie Groups, Lie Algebras and Representation Theory

Independent Study: Measure Theory

Independent Study: Knot Theory
Independent Study: Regular and Inverse Semigroups
Independent Study: Projective Geometries

September 1995 - May 1997

Winona State University - Assistant Professor of Mathematics

Courses Taught: Calculus I, II
Precalculus I
Abstract Algebra
Multivariable Calculus
Discrete Math
Contemporary Math
Math with Applications to Business

Publications

- “Conjugacy of Alt_5 and $SL(2, 5)$ subgroups of $E_8(\mathbb{C})$,”
Memoirs of the American Mathematical Society, Vol. 133, No. 634, (1998), 1-162.
- “Conjugacy of Alt_5 and $SL(2, 5)$ subgroups of $E_6(\mathbb{C})$, $F_4(\mathbb{C})$ and a subgroup of $E_8(\mathbb{C})$ of type A_2E_6 ,” *Journal of Algebra*, Vol. 202, (1998), 414-454.
- “Conjugacy classes of elements in the Borovik group,” (with Robert L. Griess, Jr.)
Journal of Algebra, Vol. 203, (1998), 226-243.
- “Generalizing Bailey’s Generalization of the Catalan Numbers,” (with James A. Sellers),
Fibonacci Quarterly, Vol. 39, no. 2 (May 2001), 142-148
- “Jacobsthal Numbers and Alternating Sign Matrices,” (with James A. Sellers)
Journal of Integer Sequences, Vol. 3, no. 2 (2000), Article 00.2.3.
- “Conjugacy of Alt_5 and $SL(2, 5)$ subgroups of $E_7(\mathbb{C})$ ”
Journal of Group Theory, Vol. 4, (2001), 277-323.
- “On Powers of 2 Dividing the Values of Certain Plane Partition Functions,” (with James A. Sellers)
Journal of Integer Sequences, Vol. 4, no. 1 (2001), Article 01.1.8.
- “Prime Power Divisors of the Number of $n \times n$ Alternating Sign Matrices,”
(with James A. Sellers) *Ars Combinatoria*, Vol. 71 (2004), 139-147.
- “Arithmetic Properties for a Certain Family of Knot Diagrams,” (with James A. Sellers)
Ars Combinatoria, Vol. 77 (2005), 65-73.
- “Conjugacy of Embeddings of Alt_n and its Nonsplit Central Extensions into Exceptional Complex Lie Groups for $n \geq 6$ with Appendix by A.J.E. Ryba,” (submitted to *Journal of Algebra* in September, 2008)

Awards

1999

Cedarville Summer Scholar Award

1996

Runner-up for Sumner-Myers award for best math dissertation
at the University of Michigan

1/95 - 4/95

Rackham Dissertation Fellow

9/90 - 12/92

Department of Education Fellow

8/89

Best Student Speaker award at Pi-Mu-Epsilon national meeting, Boulder, CO

5/89

Phi Beta Kappa, University of Nebraska

Professional Speaking

Invited general interest math Lecture at Sinclair Community College, February 10, 2006
“Iteration and Chaos: Beauty from the Mundane.”

Invited speaker at the Oberwolfach Seminar “Sphere Packings: Exceptional Geometric Structures and Connections to other Fields,” November 20-26, 2005, at the Mathematisches Forschungsinstitut Oberwolfach, Oberwolfach, Germany.
“Alternating subgroups in exceptional complex Lie Groups.”

Algebra Seminar at Wayne State University, November 11, 2005

“Conjugacy of alternating subgroups and their nonsplit central extensions in exceptional complex Lie groups.”

Invited 1 hour speaker at the conference on “Algebraic Groups and Finite Reductive Groups,” June 13-17, 2005, at the Centre Interfacultaire Bernoulli at Ecole Polytechnique Federale de Lausanne, Lausanne, Switzerland.

“Alternating subgroups in exceptional complex Lie groups.”

Group Theory/Lie Theory Seminar at the University of Michigan, March 26, 2001

“Conjugacy of Embeddings of Alt_5 and $SL(2, 5)$ subgroups into $E_7(\mathbb{C})$ ”

Group Theory Seminar at Ohio State University, April 27, 1998

“Conjugacy Classes of Elements in the Borovik Subgroup of $E_8(\mathbb{C})$ ”

Algebra Seminar at Wayne State University, February 27, 1998

“Conjugacy Classes of Elements in the Borovik Group”

Invited speaker at AMS meeting #922, Special Session on Groups and Geometries and Related Topics, May 3-4, 1997, Detroit, Michigan.

“Recent progress in classifying Alt_5 and $SL(2, 5)$ subgroups of exceptional complex Lie groups up to conjugacy”

Invited speaker at AMS meeting #904, Special Session on Groups

and Geometries and Related Topics, November 3-4, 1995, Kent, Ohio.

“Conjugacy of Alt_5 and $SL(2, 5)$ subgroups of $E_6(\mathbb{C})$ ”

Invited speaker at AMS meeting #899, Special Session on Finite Groups and Related Topics, March 17-18, 1995, Orlando, Florida.

“Conjugacy of Alt_5 and $SL(2, 5)$ subgroups of $E_8(\mathbb{C})$ ”

Invited speaker at Joint AMS, MAA, Pi-Mu-Epsilon meeting, August 1 - 6, 1989, Boulder, Colorado.

“Conjugation in inverse semigroups”

Conferences Co-Organized

June 2000

MAA Ohio Section Summer Short Course: “Proofs and Confirmations: The Story of the Alternating Sign Matrix Conjecture” (with James A. Sellers)
Speaker: David Bressoud, Macalester College

June 1997

MAA North Central Section Summer Short Course: “An Introduction to Artificial Neural Networks” (with Steven D. Leonhardi and Barry A. Peratt)
Speakers: Richard De Veaux, Williams College
Lyle Unger, University of Pennsylvania

Other Conferences

October/November 2003

Conference on Groups, Representations and Galois Theory in Honor of Walter Feit, Yale University

March 2003

Conference on Groups and Computation, Ohio State University

September 2001

AMS Regional Meeting, Ohio State University

April 2000

MAA Ohio Section meeting, Marshall University

April 1999

Midwest Group Theory Conference, Bowling Green State University

March 1999

MAA Ohio Section meeting, University of Dayton

April 1998

MAA Ohio Section meeting, John Carroll University

April 1997

Conference on Finite Simple Groups in memory of Daniel Gorenstein, Queen’s College

May 1996

The Second Monster Conference, Ohio State University

January 1995

AMS-MAA Joint Meeting, San Francisco, CA

Fall 1992

AMS Regional Meeting, Wright State University

1991, 1992, 1993

Midwest Group Theory Conference, University of Chicago
July 1989
Berkeley Conference on Monoids, University of California at Berkeley

Seminars

Group Theory Seminar - Ohio State University
Group Theory Seminar - University of Wisconsin - Madison
Faculty seminar - Winona State University
Group theory/Lie theory seminar - University of Michigan
Student Group theory - University of Michigan
Student Lie algebras - University of Michigan
Student algebra (organizer) - University of Michigan
Semigroup theory seminar - University of Nebraska

Research Reviewing and Refereeing

Reviewed for *Mathematical Reviews*

Barchini, L., and Sepanski, Mark R., "Finite-reductive dual pairs in G_2 ,"
Linear Algebra and its Applications, Vol. 340 (2002), pp. 123-136.

Steinbach, Anja, "Subgroups of the Chevalley Groups of Type F_4 Arising
From a Polar Space," *Advances in Geometry*, Vol. 3 (2003), 73-100.

Lusztig, George, "Homomorphisms of the alternating group A_5 into reductive
groups," *Journal of Algebra*, Vol. 260 (2003), 298-322.

Refereed

Cusick, Larry, "The Hyperoctahedral Group & Free Symmetries of the Hypercube"
for the *American Mathematical Monthly*.

Alikhani, Saeid, and Peng, Yee-hock, "Product Formula for Jacobsthal Polynomial"
for the *Journal of Applicable Analysis and Discrete Mathematics*. (June 2008).

Department/College Service

Math Subchair 2002 -
Department Tenure Committee 2004-2007
Education Internal Advisory Council
Developed the course: Beautiful Math Structures and Thinking
Developed the course: Algebraic Structures for Secondary Education
Co-hosted (with Dr. James Sellers) the MAA-Ohio Section Short Course entitled
"Proofs and Confirmations: The Story of the Alternating Sign Matrix Conjecture."

Community/Church involvement

AWANA worker - 1997-2008
Deacon (Secretary and member of the Executive Committee, also in charge of
socials and hospitality) 2005-2008
Junior High leader - 2007-present
Occasional Sunday School teacher (both adult and children)

Soccer Coach - 8-9 year old boys - 2005

Vice President, Cedarville Soccer Association - 2004-2005

President, Cedarville Soccer Association - 2006-present