Christopher P. French

Curriculum Vitae

Department of Mathematics and CS
Grinnell College
Noyce Science Center
Grinnell, IA 50112

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Personal

Born: April 6, 1973, Norwich, CT

Citizenship: U.S.A.

Employment

Professor, Grinnell College 2015-present

Associate Professor, Grinnell College 2009-2015

Associate Professor, Grinnell College 2003-2009

VIGRE Research Assistant Professor, University of Illinois at Urbana-Champaign 2001-2003

Education

Ph.D. **University of Chicago**, Chicago, IL 2001
THESIS TITLE: "THE EQUIVARIANT J-HOMOMORPHISM"
THESIS ADVISOR: J.P.MAY

M.S. **University of Chicago**, Chicago, IL 1996

B.A. **Williams College**, Williamstown, MA 1995
Mathematics and Classics, *summa cum laude,* with highest honors in mathematics, Phi Beta Kappa and Sigma Xi

Teaching Experience

Professor, Grinnell College 2003-present

Course taught: Calculus I, Calculus II, Linear Algebra, Symmetry, Differential Equations, Differential Geometry, Combinatorics, Elementary Number Theory, Foundations of Algebra, Foundations of Analysis, Complex Analysis, Topology, Gauge Field Theory, Lie Algebras, Problem Solving Seminar, a Tutorial on Cryptography, and two Tutorials on Numbers.

VIGRE Research Assistant Professor, UIUC 2001-2003

Courses taught: Advanced Aspects in Euclidean Geometry, Calculus on Curves and Surfaces, Multivariable Calculus and Vector Analysis

Lecturer in Mathematics, University of Chicago 1998-2001

Courses taught: Mathematics for Social and Biological Sciences, Studies in Mathematics, Calculus II, III, Elementary Functions and Calculus I, II, III

College Fellow in Mathematics, University of Chicago 1996-1997

TA for Basic Algebra I, II, III: ran problem sessions, graded homework, held office hours, delivered 10 observed lectures

Undergraduate Research Projects Advised

Mentored Advanced Project Summer 2017
"Extensions of Projection Association Schemes,"
Russ Haight (Grinnell College)

Mentored Advanced Project Summer 2017
"Realizing Symmetric Hypergroups of Rank 4,"
Bingyue He (Grinnell College)

Mentored Advanced Project Summer 2016
"Realizing Hypergroups as Association Schemes,"
Bingyue He, Jun Taek Lee (both Grinnell College)

Mentored Independent Project (Codirected with Karen L. Shuman) Summer 2014
"Orthogonal polynomials, Moment sequences, and Distance Regular graphs,"
Rachel Carpenter, Sean Cates, Daniel Davis, Elizabeth Eason,
Thomas Estabrook, and Caleb Leedy (all Grinnell College)

Mentored Advanced Project Summer 2013
"Non-commutative Association Schemes of Rank 6,"
Ben Drabkin (Grinnell College)

Mentored Advanced Project Summer 2011
"The Extension Problem for Association Schemes,"
Boanne MacGregor (Grinnell College)

Mentored Advanced Project Summer 2010
"Hankel Transforms and Catalan Numbers,"
Wenyang Qian, Michael Dougherty, and Ben Saderholm (Grinnell College)

University of Iowa VIGRE REU Summer 2009
Taught 9 students (3 from Grinnell) a four-week short course on Representations and Group Theory
Assisted in advising 3 students on a research project on Clean Rings and Optimal Numbers

Mentored Advanced Project Summer 2007
"Hankel Transforms and Catalan Numbers,"
Mona Chughtai and Jesse Peterson-Brandt (Grinnell College)

Mentored Advanced Project Summer 2007
"Fibonacci Numbers and Continued Fractions,"
Jose Bonnin Cadogan and Lynn Xue (Grinnell College)

Mentored Advanced Project Summer 2005
"Writing permutations as products of cycles," Norman Perlmutter (Grinnell College)

Academic Year REU 2002-2003
"The Relationship Between Knot Determinants and Crossing Numbers," Benjamin Lundell (UIUC)

UIUC summer VIGRE REU program Summer 2002
"Differentiable Loops in the Hawaiian Earring," Bryce Johnson (Washington University in St. Louis)
Determines when an element in $\pi_1(H)$ has an n-times differentiable representative, for $1 \leq n \leq 4$. Conjectured conditions given for $n > 4$.

"A Study in Algebraic Topology," Michael Mullig (UIUC)
Describes aspects of algebraic topology, including fundamental group and simplicial homology.

University of Chicago summer VIGRE REU program Summer 2000, 2001
Served as graduate student assistant, mentoring students in geometry and topology

Honors and Awards

Academic Enterprise Leave for Fall 2011.
Harris Fellowship for 2006-2007.
Attended conference at the University of Chicago:
"Interactions between Homotopy Theory and Algebra" July 25-August 6, 2004
Selected on a competitive basis. Conference included 2 weeks of lectures by invited speakers
University of Chicago Physical Sciences Division Teaching Award 2001
Selected on the basis of student nominations
University of Chicago Department of Mathematics Graves Prize for Teaching 2000
National Defense Science and Engineering Graduate Fellowship 1995-1998
Barry Goldwater Scholarship 1994

Service Activities

Department of Mathematics and Statistics, chair 2016-2017
Faculty Organization Committee, science division representative 2016-2017
Faculty Organization Committee, chair 2015-2016
Faculty Organization Committee, chair-elect 2014-2015
Humanities Center Board 2013-2016
Organizer Math and Statistics Student Seminar 2012-2016
Curriculum committee 2012-2016
Faculty Mentoring network 2012-2015
Committee on Academic Standing, subcommittee on Academic Honesty 2012-2013
Off-campus Study committee 2010-2011
Committee on Academic Standing, subcommittee on Academic Honesty (chair in 2008-2009) 2007-2010
Instructor in the Honors Scholars/Summer Institute, teaching *The Problem Solver* Summer 2005, 2006
Co-organizer of Science Teaching and Learning Group, Grinnell 2004-2006, 2007-2009
Member of the Writing Advisory Committee, Grinnell 2005-2006, 2007-2009
Organizer Math/CS student seminar, Grinnell 2003-2006
Faculty Coordinator for Iowa Mathematics Competition April 17, 2004
Grinnell liaison for Heartland Mathematics Project 2003-present
Organizer Max Newman Topology Seminar, UIUC Autumn 2002

Presentations

Noncommutative association schemes of rank 6 with affine subschemes
AMS Fall Western Sectional Meeting, Denver, CO 10/8/17
Noncommutative association schemes of rank 4
Combinatorics/Algebra Seminar, Iowa State University 4/25/16
Groups of permutations/hypergroups of relations
Pure Mathematics Seminar, University of Texas Rio Grande Valley 1/22/16
Realizing hypergroups as association schemes
AMS Central Fall Sectional Meeting, Chicago, IL 10/4/15
Schemes for extending the theory of extensions of schemes
8^{th} Slovenian Conference on Graph Theory, Kranjska Gora, Slovenia 6/23/15
Noncommutative imprimitive association schemes of rank 6
Southeastern Spring Sectional Meeting of the AMS, Knoxville, TN 3/21/14
Functors from Association Schemes
Spring Central Sectional Meeting of the AMS, Ames, IA 4/28/13
Association Schemes of Rank 6
Colloquium, University of Texas at Brownsville. 1/16/13
Noncommutative Association Schemes of Rank 6
The second workshop on association schemes at St. Petersburg,
Steklov Institute of Mathematics of the Russian Academy of Sciences, St. Petersburg, Russia. 7/17/12
The Extension Problem for Association Schemes: Semidirect Products
Colloquium, Department of Mathematical Sciences, Northern Illinois University at Dekalb. 3/5/12
Association schemes and their modules
Algebra and Geometry Seminar, University of Texas at Pan-American. 2/3/12
Catalan Numbers and Hankel Transforms
MAA Sectional Meeting, Pella, IA. 10/21/11
The Hankel Transform and Catalan Numbers
Colloqium, University of Texas at Brownsville. 10/18/10
Equivariant Cannibalistic Classes
Topology Seminar, Wayne State University. 4/13/10
A splitting of $Q_G S^0$ at a prime p
Special Session at an AMS Sectional Meeting, Murfreesboro, TN. 9/4/07
The Equivariant Adams Conjecture and the Equivariant J-homomorphism
University of Wisconsin topology seminar, Madison, WI 10/15/04
Fifth Roots of Fibonacci Fractions
MAA Iowa sectional meeting, Pella, IA 4/17/04
Intractable Trisectional Troubles
Macalester College, St. Paul, MN 4/12/04
Discrete Torsion and the Orbifold Sigma Genus
AMS Sectional Meeting in Homotopy Theory and Geometric Topology, Orlando, FL 11/10/02

Publications and Preprints[1]

1. "Noncommutative schemes of rank 6 with affine subschemes"
   Joint work with Paul-Hermann Zieschang
   (Under review).

2. "On the normal structure of non-commutative association schemes of rank 6"
   Joint work with Paul-Hermann Zieschang
   Communications in Algebra. **44** (2016), no. 3, 1143–1170.

3. "On a class of non-commutative imprimitive association schemes of rank 6"
   Joint work with Ben Drabkin*
   Communications in Algebra. **43** (2015), no. 9, 4008–4041.

4. "A Schur-Zassenhaus theorem for association schemes"
   Joint work with Paul-Hermann Zieschang
   Journal of Algebra. **435** (2015), 88–123.

5. "Functors from Association Schemes"
   Journal of Combinatorial Theory, Series A. **120** (2013), 1141-1165.

6. "A new Semidirect Product of Association Schemes"
   Journal of Algebra. **347** (2011), 184–205.

7. "Hankel Transforms of Linear Combinations of Catalan Numbers"
   Joint work with Michael Dougherty*, Benjamin Saderholm*, and Wenyang Qian*.
   Journal of Integer Sequences. **14** (2011), Article 11.5.1.

8. "The Equivariant J-homomorphism for Finite Groups at Certain Primes"
   Algebraic Geometry and Topology. **9** (2009) 1885–1949.

9. "Continued Fractions of Roots of Fibonacci-Like Fractions"
   Joint work with Jose Bonnin-Cadogan* and Buchan Xue*.
   Fibonacci Quarterly. **46/47** (2008/09), no. 4, 298–311.

10. "Splittings in the Burnside Ring and in SF_G"
    Homology, Homotopy, and Applications. **10** (2008), no. 1, 1–27.

11. "Transformations Preserving the Hankel Transform"
    Journal of Integer Sequences. **10** (2007), Article 07.7.3.

12. "Generalized Catalan Numbers and Generalized Hankel Transformations"
    Joint work with Marc Chamberland
    Journal of Integer Sequences. **10** (2007), Article 07.1.1.

13. "Discrete Torsion for the Supersingular Orbifold Sigma Genus"
    Joint work with Matthew Ando.
    Contribution to *Elliptic Cohomology: Geometry Applications, and Higher Chromatic Analogues.*
    London Mathematical Society Lecture Note Series, 342. March, 2007.

14. "Fifth Roots of Fibonacci Fractions"
    Fibonacci Quarterly. **44** (2006), no. 3, 209–215.

[1] Asterisks indicate Grinnell College undergraduates

15. "The Equivariant J-Homomorphism"
Homology, Homotopy, and Applications. **5** (2003), no. 1. 161–212

16. "Wulff Clusters in R2" Joint work with Frank Morgan and Scott Greenleaf.
Journal of Geometric Analysis 8 (1998), 97–115.
