

Jeffrey B. Farr

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Education

- Ph.D., Mathematical Sciences** December 2003
Clemson University, Clemson, SC
Concentration: Computational Algebra, Coding Theory
Dissertation: "Computing Gröbner Bases, with Applications to Multivariate Padé Approximation and Algebraic Coding Theory"
Advisor: Prof. Shuhong Gao
- M.S., Mathematical Sciences** December 1999
Clemson University, Clemson, SC
Concentration: Algebra, Discrete Math.
Advisor: Prof. Neil Calkin
- B.S., Mathematics,** May 1998
Bob Jones University, Greenville, SC
Minor: Physics

Publications

All articles may be found on my webpage noted above.

- (with N. Calkin), Slow Convergence of a Double-Biased Sequence, *Congressus Numerantium*, **159** (2002), 159-165.
- (with S.T. Hedetniemi, R. Laskar, et al.), Gallai Theorems Involving Domination Parameters, *Congressus Numerantium*, **157** (2002), 149-157.
- Renu Laskar: Changing Obstacles into Opportunities (non-refereed), AWM Biographical Essays, published online at <http://www.awm-math.org/biographies/contest/JeffreyFarr2002.html>.
- (with S. Gao) Gröbner Bases, Padé Approximation, and Decoding of Linear Codes, (survey paper), Proceedings of Conference and Workshop on Coding Theory and Quantum Computing (Charlottesville, 2003), *to appear in Contemporary Math.*
- (with S. Gao) Computing Gröbner Bases for Vanishing Ideals of Finite Sets of Points, *submitted*.
- (with S. Gao) Gröbner Bases and Generalized Padé Approximation, *to appear in Math. Comp.*
- (with P. Lisoněk) Caps with Free Pairs of Points, *submitted to J. Geom.*
- (with P. Lisoněk) Product Constructions for Caps with Free Pairs, *in preparation*.
- (with S. Gao and D. Noneaker) Constructing and Decoding of Linear Codes via Gröbner Bases, *in preparation*.

Research Interests

Error-Correcting Codes, Discrete Math, Gröbner Bases and Multivariate Polynomials

Please see my Research Statement for details.

Experience

Postdoctoral Fellow, Simon Fraser University, Burnaby, BC January 2004 - present
Participating in research within the computer algebra and discrete math groups. Also, participating in the symbolic computation project supported by MITACS NCE of Canada.

Sessional Instructor, Simon Fraser University, Burnaby, Surrey, BC Spring 2004, 2005
Taught Math 408 Discrete Optimization.
Teaching Math 343 Applied Discrete Mathematics.

Research Assistant, Clemson University, Clemson, SC August 2000 - December 2003
Conducted research to benefit wireless communication systems.

Instructor, Greenville Technical College, Greenville, SC Summer 2000
Taught College Algebra and Intro to Discrete Math

Teaching Assistant, Clemson University, Clemson, SC January 1998 - December 2002
Taught Calculus of One Variable (I & II) and Business Calculus. Additional duties included grading for Calculus I, Calculus III and Graph Theory (graduate level).

Conference, Seminar and Workshop Presentations

A Polynomial Approach to Algebraic Geometry Codes, Special Session on Algebraic Geometry Codes, AMS/MAA Joint Mathematics Meetings, Atlanta (January, 2005).

Large caps with free pairs in $PG(N, q)$, Discrete Mathematics/PIMS Seminar, Simon Fraser University, Burnaby, British Columbia (October, 2004).

Using Gröbner Bases to Construct Linear Codes, Session on Computer Algebra and Coding Theory, International Conference on Applications of Computer Algebra, Beaumont, Texas (July, 2004).

Implementing the Gröbner Walk in Maple, Poster Session, East Coast Computer Algebra Day ECCAD2004, Wilfrid Laurier University, Waterloo, Ontario (May, 2004).

A New Polynomial Construction for Some Linear Codes, Discrete Mathematics/PIMS Seminar, Simon Fraser University, Burnaby, British Columbia (January, 2004).

Computing Gröbner Bases for Vanishing Ideals of Finite Sets of Points, Computer Algebra Seminar, Simon Fraser University, British Columbia (January, 2004).

Gröbner Bases, Padé Approximation and Coding Theory, Informal Algebra and Number Theory Seminar (Thesis Defense), Clemson, South Carolina (November, 2003).

Computing Gröbner Bases for Vanishing Ideals of Finite Sets of Points, Session on Gröbner Bases and Applications, International Conference on Applications of Computer Algebra, Raleigh, North Carolina (July, 2003).

Computing Gröbner Bases for Vanishing Ideals of Finite Sets of Points, Poster Session, East Coast Computer Algebra Day ECCAD2003, Clemson, South Carolina (April, 2003).

A New Method for Decoding Algebraic Geometry Codes, Special Session on Computational Algebraic and Analytic Geometry for Low-dimensional Varieties, AMS/MAA Joint Mathematics Meetings, Baltimore (January, 2003).

Slow Convergence of a Double-Biased Sequence, Southeast Regional Meeting on Numbers (SERMON), Clemson, South Carolina (March, 2002).

Slow Convergence of a Double-Biased Sequence, Thirty-third Southeastern International Conference on Combinatorics, Graph Theory, and Computing, Boca Raton, Florida (March, 2002).

The Main Conjecture for MDS Codes, Informal Algebra and Number Theory Seminar, Clemson University, Clemson, South Carolina (January, 2002).

Instructional Training

Seminar in Preparing for College Teaching in the Mathematical Sciences Fall 2002
Took graduate course examining various responsibilities of the tenure-track college mathematics professor, with emphasis on broadening teaching strategies and skills and on improving classroom performance. The director for this course was Prof. Joel Brawley, nationally acclaimed math professor and teacher.

Professional Development and Memberships

Teaching and Doing Mathematics with Maple August, 2004
Participated in week-long workshop.

2003 East Coast Computer Algebra Day (ECCAD03) April, 2003
Local organizing committee. Poster session committee.

American Mathematical Society Member 2000 - present

SOA/CAS Actuarial Examination 1 May, 2001

Mathematical Sciences Research Institute (MSRI) August, 2000
Participated in workshop on algorithmic number theory.

Honors and Awards

Outstanding Ph.D. Student 2003 - 2004
Mathematical Sciences Department, Clemson University, Clemson, SC

Award for Significant Contribution to Graduate Program 2001 - 2002
Mathematical Sciences Department, Clemson University, Clemson, SC

R.C. Edwards Graduate School Fellowship 1999 - 2000
College of Engineering and Science, Clemson University, Clemson, SC

Clayton V. Aucoin Outstanding Masters Student Award 1998 - 1999
 Mathematical Sciences Department, Clemson University, Clemson, SC

Outstanding Senior Award 1997 - 1998
 Department of Mathematics, Bob Jones University, Greenville, SC

Academic Service

Departmental Graduate Student Seminar 2001 - 2002
 Began and organized a new seminar in the math sciences department.

Other Service

South Carolina Student Legislature, Delegation Chair 1996, 1997

Eastern European Musical Mission Team Summer, 1997

Deacon, Faith Free Presbyterian Church, Greenville, SC 2001 – present

References

Shuhong Gao, Professor of Mathematical Sciences. Mathematical Sciences Department, Clemson University, Clemson, SC 29634, sgao@ces.clemson.edu

Joel Brawley, Professor of Mathematical Sciences. Mathematical Sciences Department, Clemson University, Clemson, SC 29634, brawley@clemson.edu

Neil Calkin, Associate Professor of Mathematical Sciences. Mathematical Sciences Department, Clemson University, Clemson, SC 29634, calkin@ces.clemson.edu

Jennifer D. Key, Professor of Mathematical Sciences. Mathematical Sciences Department, Clemson University, Clemson, SC 29634, keyj@ces.clemson.edu

Petr Lisoněk, Assistant Professor of Mathematics. Department of Mathematics, Simon Fraser University, Burnaby, British Columbia V5A 1S6, lisonek@cecm.sfu.ca