VITA: MICHAEL D. FRIED www.math.uci.edu/~mfried

Michael D. Fried

Contents

Abstract. My web location at the head of a location appears as **mysite/***precise_location*. Add .html to go directly to it; most have abstracts + html expositions attached.
Research Specialities: Mathematics: moduli spaces and modular curve generalizations like Modular Towers; Riemann surfaces and theta functions; applied finite and profinite group theory; Diophantine equations
Education: Assessing a quality education using Interactive Questionnaires.

1. POSITIONS: TEMPORARY AND PERMANENT

1.1. Degrees. B.S., Michigan State University, E. Lansing, Michigan, 1961
Ph.D., University of Michigan, Ann Arbor, Michigan, 1967

1.2. Period 1961–73.

1. *Dynamics Engineer*, Allied Res. Assoc., Boston, Mass., June 1961–March 1962.
2. *Dynamics Engineer*, Bell Aero–Systems, Buffalo, New York, Oct. 1962–Sept. 1964.
3. *Graduate School*, Univ. of Mich., Ann Arbor, Mich., Sept. 1964–June 1967.
4. *Member, Inst. for Adv. Study*, Princeton, NJ Sept. 1967–June 1969.
5. *Associate Professor*, SUNY at Stony Brook, New York, September 1969–1973.
6. *Visiting Associate Professor*, M.I.T., Boston, Mass., Sept. 1971–Jan.1972.
7. *Visiting Associate Professor*, Univ. of Mich., Ann Arbor, Jan. 1972–June 1972.
8. *Member, Inst. for Adv. Study*, Princeton, NJ, Jan. 1973–June 1973.

1.3. Period 1974–present.

9. *Professor, UC Irvine*, July 1974—present.
10. *Visiting Full Professor (VFP)*, Tel-Aviv University, Spring 1976.
11. *Fulbright Research Fellow*, Helsinki University, September 1982—January 1983.
12. *Director: UCI Summer Mathematics Institute for K-12 teachers*, 1982–87.
13. *Lady Davis Research Professorship*, Hebrew University in Jerusalem, September 1984–January 1985.
14. *VFP*, Hebrew University, Fall 1988.
15. *Professor, University of Florida*, July 1986–Fall 1989.
16. *Member, Institute for Advanced Studies*, Hebrew University, Jerusalem, Israel, September 1991–June 1992.
17. *VFP*, Erlangen University, Fall 1994, under the Alexander Humboldt program.
18. *VFP*, Inst. of Experimental Mathematics, Essen, Germany, Spring-Summer 1995, under Alexander Humboldt program.
19. *VFP*, Hebrew University, Spring 1999.
20. Visiting Research Prof. at MSRI, Fall 1999.
21. VFP, University of Florida, Winter 2003.
22. Adjunct Research Professor, and Director of *Continuous Assessment Office***, MSU-Billings, 2002-Present.**

2. HONORS, AWARDS AND FELLOWSHIPS

1. *Nat. Merit*; *NY State Regents* **Engineering 5-year scholarship. June, 1959**
2. *NSF Graduate Student Fellowship*: **Graduate School. 1965–67.**
3. *Alfred P. Sloan Foundation Grant* **1971–73.**
4. *Fulbright Research Grant*—**Helsinki University—Fall 1982.**
5. *Lady Davis Research Professor*—**Hebrew University (Jerusalem), 1984.**
6. *Physical Science Outstanding Teaching Award*, **1982–83.**
7. *Nov. AMS meeting at Irvine*, **Parameter spaces for the inverse Galois problem, one hour talk, Nov. 11th, 1990.**
8. *Institute for Advanced Studies—Hebrew University*—**Givat Ram Institute (Jerusalem), year long meeting in "Field Arithmetic," 1991–92.**
9. *Alexander von Humboldt Shtiftung*, **Recipient of a Humboldt Research Award for senior scientists, 1994–95.**
10. Visiting Research Prof. at MSRI, Fall 1999.

3. GRANTS FROM AGENCIES

1–12. *NSF Summer Research Grant* **1968–83.**
13. *BiNational Science Foundation Grant–Israel* **Co-principal Investigator with Moshe Jarden at Tel-Aviv University, 1978–81.**
14-15. *CMP (California Math Project Grant)*—**$46,000 for 1984, $63,000 for 1985; 16.** *NSF Education Grant*: **Co-principal investigator (with Mare Taagepera, Chemistry, and Rita Peterson, Teacher Education)—$546,000—1984–87.**
17. *NSF continuing Research Grant*, **Effective computation of zeta functions attached to arithmetic statements over p-adic rings, 1985–88, $87,000.**

18. *NSF continuing Research Grant with John Thompson*, **Connectivity of the Hurwitz monodromy group and groups as Galois groups, 1987–90, $243,000.**
19. *BiNational Science Foundation Grant–Israel #87- 00038*, **Moduli dimension and monodromy action, Co-principal Investigator with Hershel Farkas at Hebrew University, 1988–91, $60,000.**
20. *Irvine Faculty Research Fellowship #90/91–15*, **Riemanns's existence theorem and the absolute Galois group of the rationals, 1991–92, $10,000.**
21. *N(ational)S(ecurity)A(gency) #MSPR-129-90* **Parameter Spaces in the Inverse Galois Problem 6/30/91–9/30/93, $67,000.**
22. *N(ational)S(cience)F(oundation)#MDR-9054644* **Co-principal investigator with Mark Dolson of UCSD Learning Math and Science through the exploration of Sound 1/1/91–9/30/93, $47,000.**
23. *N(ational)S(cience)F(oundation) #DMS-9622928* **Success of the Monodromy Method 6/30/93–9/30/96, $60,000.**
24. *NSF #DMS-9622928* **Research Education Undergrad. Funds 6/30/93–6/30/94, $3,250.**
25. *UCI #???* **Undergrad. Dean: Classroom Diversity Projects 6/30/93–9/30/94, $2,500.**
26. *UCI #???* **Journal based Calculus Assessment, 6/30/93–6/30/94, Registrar's Office and EOP—joint contribution, $4000.**
27. *Alexander von Humboldt Shtiftung*, **Recipient of a Humboldt Research Award for senior scientists, 8 months at my choice of institutions with remuneration of 60,000 DM, 1994–95.**
28. *Sloan Foundation*, **Retention of Students using electronic portfolios, 6/30/94–9/30/95, $30,000.**
29. *NSF #DMS-99305590* **Research Education Undergraduate Funds 6/30/94–6/30/95, $5,000.**
30. *NSF #DMS-9622928*, **Homogeneous space properties of non-homogeneous spaces, 6/30/96–9/30/99, $86,000.**
31. *NSF #DMS-9632373*, **Internat. Press conference: The combinatorics of Multiplicity Free Representations, featured speaker Roger Howe, 6/30/96–3/30/97, $10,000.**
32. *Grad. Res. Dean*, **IP conf. as above, 6/30/96–3/30/97, $2,500.**
33. *American Math. Soc.*, **Funds for running a Von Neumann Symposium, Aug. 15–27, 1999, 8/30/98–8/30/99, $30,000.**
34. *NSF #DMS-9970676*, **Modular Towers of noncongruence curves, 6/30/99–6/30/2002, $92,000.**
35. *NSF DMS-0202259*, **Upper half plane quotient moduli spaces and the Inverse Galois Problem, 6/30/2002–6/30-2005, $110,688.**
36. *RIMS-UCI II collaboration conference: Arithmetic applications of moduli degeneration*, **03/01/03–02/28/04, $11,000.**
37. *NSF DMS-0455266*, **Conference: Arithmetic Geometry of the M(odular)T(owers)/R(egular)I(nverse)G(alois)P(roblem)/S(trong)T(orsion)C(onjecture) connections, 05/01/2006–5/01/2007, $20,000.**

4. EDITORIAL BOARD SERVICE AND RELATED:

Period 1987–Present

1. *Bull. Amer. Math. Soc.*, **Assoc. Ed., Research Announcements, 1988–1991.**
2. *Pacific J. Math*, **UC Irvine representative to the board.**
3. *Bull. Amer. Math. Soc.*, **Assoc. Ed., Research Announcements, 1991–1994.**
4. *National Research Council*, **Member of the Committee on Group Theory for the Board of Mathematical Sciences, Mar. 93–Mar. 95.**
5. *Chair: AMS Summer Institute: Recent Developments on the Inverse Galois Problem*, **Seattle conference, July 15– 22, 1994.**
6. *Finite Fields and their Applications*, **Editor for Academic Press journal, 1994–1999. 5.** *AMS*, **Chair, Committee on Summer Institutes and Special Symposium, March, 1996 to Feb. 1, 1999.**
7. *Committee chair: International Press Lectures at Irvine, featuring Roger Howe*, **Invariant Theory, Jan 25–28.**
8. *Chair: AMS Summer Institute in Curves over Finite Fields*, **Seattle conference, July 15– 22, 1997.**
9. *Member of Organizing committee for MSRI semester*, **Galois Groups and Fundamental Groups, Fall 1999.**
10. *Joint Editor with Y. Ihara*, **Arithmetic Fundamental Groups and noncommutative algebra, PS-PUM publication Vol. 70 (2002) Fall 1999 semester at MSRI.**
11. *CRDF (Civilian Research and Development Foundation panel) Mathematics panel*, **NSF affiliated granting agency in Washington for fSU joint projects with US researchers, Oct. 10, 2000.**
12. *Organizer: Conference at UC Irvine: Heights on moduli spaces*, **conference around Main Speaker Shou-Wu Zhang, Oct. 15, 2000.**
13. *CRDF (Civilian Research and Development Foundation panel) Mathematics panel chair*, **NSF affiliated granting agency in Washington for fSU joint projects with US researchers, Oct. 5, 2001.**
14. *RIMS conference in Kyoto Japan*, **joint organizer with Y. Ihara, Japan Prize winner,** *Degeneration of arithmetic moduli*, **Oct. 28–31, 2001.**
15. *AMS-IMS-SIAM Committee on Joint Summer research conferences*, **Jan 1, 2003 to June 30, 2007.**
16. *Profinite Arithmetic Geometry and related moduli spaces*, **Organizer with Ken Ribet (Berkeley) and Pierre Debes (Lille), April 3–7, 2006,** *Red Lodge Montana*, **25 mathematicians from all over the world.**
17. *Arithmetic Geometry of the MT/RIGP/STC connections*, **Organizer with Ken Ribet (Berkeley), Pierre Debes (Lille) and Hiroaki Nakamura (Okayama), Kyoto Japan, Oct. 16–Nov. 1, 2006.**

5. INVITED LECTURES

5.1. Period 1969–74.

1. *A.M.S.Summer Conference*, **1968, Proceedings of 1969 Conference in Number Theory, Stony Brook.**
2. *Proceedings: Summer Conf. in Number Theory*, **Boulder Colorado, 1972.**

3. *Summer Conference in Number Theory*, **New Mexico University,1973; 4.** *Winter Conference in Number Theory*, **UCLA, December 1974.**

5.2. Period 1975–Fall 1987.

5. *Conference in Algebraic Number Theory at Oberwolfach*, **Summer 1975.**
6. *Princeton University—invited 3 hour lecture*, **Spring 1975; 7.** *A.M.S. Invited—20 minute—talk*, **San Antonio Winter 1976.**
8. *Lectures on Algebraic Geometry*, **Tel Aviv Univ., April 1977—July 1977.**
9. *Lecture series at Yale University on "Complex Multiplication" and on "General Diophantine Problems,"* **last 3 weeks of March 1978.**
10. *AMS Summer Conference in Group Theory*, **Santa Cruz, June 1979.**
11. *MAA One Hour Lecture*, **Riverside, CA, Nov. 29, 1979.**
12. *Lectures: Riemann's Existence Theorem*, **Saarbrücken, Germ., March 1980.**
13. *Conference in Algebraic Number Theory*, **Oberwolfach, Summer 1981.**
14. *Series on Applications of Algebraic Geometry*, **University of Maryland, March 27—April 2, 1982.**
15. *Conference in Profinite Groups*, **Oberwolfach, May 1983 16.** *Journées Arithmetiques*, **the Netherlands, July 10–16, 1983.**
17. *AMS Invited—20 minute—talk*, **Illinois, Nov. 1983,** L**-series.**
18. *UCI Science Institute*, **February 4, 1984.**
19. *UCI Reconciling Access and excellence Conference*, **April 10, 1984.**
20. *Santa Ana High School Teacher Preparation Conference*, **April 12, 1984.**
21. *AMS Conf. on diophantine geometry*, **Bowdoin College, July 18, 1984.**
22. *Lecture (8 weeks): Riemann's Existence Theorem*, **Hebrew Univ., Fall 1984.**
23. *AMS Invited—20 minute—talk*, **Tucson, Arizona, April 1985, arithmetic function field section.**
24. *UCLA algebraic geometry seminar*, **April 25, 1985.**
25. *Model theory of Algebra seminar*, **The true effectiveness of Galois Stratifications, Oberwolfach, Germany, January 1986.**
26. *USC Math–Computer Science seminar*, **The generic cover of genus** $g > 6$ **isn't solvable, March 19, 1986.**
27. *Ontario Meeting of CMP Site Directors meeting*, **Why is the sky black at night?, April 1986.**
28. *MSRI (Math Institute at Berkeley)*, **The universal frattini cover of** A_5**; is it knowable?, Galois Theory Institute, March 1987.**
29. *AMS Conference on Graphs and Algorithms*, **Combinatorial computation of the moduli dimension of a cover, Boulder Colorado, June 29–July 3, 1987, mysite/paplist-cov.**
30. *AMS conference on Theta Functions*; **Schur multipliers and Pic**^{1}**, Bowdoin, Maine, July 13–17, 1987.**

5.3. Period Fall 1987–Summer 1990. 31. *AMS Invited—20 minute—talk*, **Ubiquity of Siegel families of genus 0 curves, Fall meeting, Lincoln Nebraska, Oct. 30-31, 1988.**
32. *Seminaire Delange-Pisot-Poiteau*, **Relations between modular curves, rigidity and arithmetic of 4 branch point covers, Paris, May 9, 1988.**
33. *Institut Henri Poincaré*, **Frattini covers and** G**-invariant points on Pic**^{1}**, May 19, 1988.**

34. *Institut Henri Poincaré*, **Measurement of exceptional primes in problems over residue class fields; L series on a Galois stratification, June 3, 1988.**
35. *Oberwolfach, Germany*, **Beyond central extensions; the universal exponent 2 cover of A_5, conf. on algebraic no. theory, August 11, 1988.**
36. *Cambridge, England*, **consultation with J. Thompson, Hilbert to Shimura on modular curves as a guide to the inverse Galois theory problem, August 15–17, 1988.**
37. *Rutgers University*, **consultation with J. Thompson and R. Guralnick, Braid group interpretations on Nielsen classes, Oct. 3–7, 1988.**
38. *University of Florida*, **Counting points of intersections of curves over finite fields, Oct. 11, 1988.**
39. *Hebrew University*, **Cohomology from branch cycles and the moduli dimension of solvable covers, Nov. 18, 1988.**
40. *Saarbrüchen conference on computational aspects about elliptic curves*, **Hurwitz monodromy prediction of elliptic curve ranks, June 23, 1989.**
41. *Inst. Henri Poincaré*, **Real specializations of cover fibers, June 29, 1989.**
42. *AMS Invited—20 minute— talk*, **Serre's problem on lifting A_n covers to unramified $\tilde{A}_n$-covers, Fall meeting, UCLA, Nov. 17–18, 1989.**
43. *Saddleback H. S., Santa Ana*, **Computer security and Public Key Cryptology, December 6th, 1989.**
44. *Oberwolfach, Germany*, **Every finite group is a Galois group over a PAC Hilbertian field, conference on Model Theory, January 21–27, 1990.**
45. *Ulam Journal Inaugural Conference in Algebraic Geometry* **at Palm Beach Atlantic University, February 17–19, 1990.**
46. *Feit Commemorative Conf. on Galois groups*, **The RG-Hilbertian property and rational points on moduli spaces, Oxford Univ., April 8–11, 1990.**
47. *Lecture series at Essen, Germany*, **Arithmetic and the Hurwitz monodromy group, April 20–27, 1990.**
48. *Oberwolfach, Germ.*, **Hurwitz monodromy action on generators of the universal Frattini cover of A_5, Profinite Groups, April 29–May 5, 1990.**

5.4. Period Fall 1990–Spring 1994.

49. *AMS Conference, "Logic, Local fields and subanalytic sets"*, **p-adic Versions of Čebotarev's Theorem Amherst, Mass., June 28–July 4, 1990.**
50. *Oberwolfach, Germany*, **Hilbertian Fields that are PAC are ω-free, Arithmetic Fields conf., Oct. 20–27, 1990.**
51. *Nov. AMS meeting at Irvine*, **Parameter spaces for the inverse Galois problem, one hour talk, Nov. 11th, 1990.**
52. *March AMS meeting in Tampa*, **Nielsen separation; distinct orbits of $G(\bar{\mathbb{Q}}/\mathbb{Q})$ actions detected by representation theory, March 22–23, 1991.**
53. *USC Algebra Seminar*, **Clarification of the necessity of the R(egular)G(alois) version of Hilbert's irreducibility theorem in the Inverse Galois problem, March 12th, 1991.**
54. *Journée Arithmetic*, **Arithmetic variation of elliptic curves in families, September 8th–12th, 1991.**
55. *Institut Henri Poincaré*, **Fields with pro-free absolute Galois group, with applications to the inverse Galois problem, December 4, 1991.**

56. *AMS conference in Computing in Algebraic Geometry*, **Amherst Mass., July 3–28, 1992.**
57. *International School on Algebra and Model Theory*, **Institute of Information Technologies and Applied Mathematics of Russian Academy of Sciences in Omsk, August 17-23, 1992 (due to prior commitment, didn't attend).**
58. *Orange County Math. Council—Irvine Valley College*, **Integrating 9th-10th grade Math.—Too Many lines in the Curriculum", Oct. 3rd, 1992.**
59-60. *Michigan Number Theory Seminar and Rutgers Algebra Seminar*, **Exceptional Polynomials and Carlitz's Conjecture, Ann Arbor and New Brunswick, Nov. 2 and Nov. 6, 1992.**
61. *USC Algebra Seminar* **The absolute Galois group of the totally real numbers is freely generated by involutions, USC, Nov. 10,1992.**
62. *Arithmetic Geometry and Iwasawa Theory*, **Hecke Operators and Hurwitz Spaces, Tempe Arizona, Mar. 15–20, 1993.**
63. *Cal Tech Group Theory seminar*, **What the classification has to say about Exceptional Polynomials, April 13, 1993.**
64. *Field Arithmetic*, **Hurwitz spaces and Universal Frattini covers, Oberwolfach, Germany, April 18–24, 1993.**
65. *Dessins d'enfant*, **Rational Points on Hurwitz spaces, Talk given by co-writer Pierre Debes, Luminy, France, April 19–24, 1993.**
66. *AMS Conference on Recent Developments in the Inverse Galois Problem*, **Conference Organizer, July 24–30, 1993.**
67. *UN LV Las Vegas: Conference on Finite Fields*, **Riemann's Existence Theorem in Positive Characteristic, Aug. 17–21, 1993.**
68. *Bourdeaux France: Journee Arithmetic*, **Exceptional Covers and Median-Point Curves over Finite Fields, Sept. 12–17, 1993.**
69. *USC Algebra Seminar*, **Modular Towers, Mar. 1, 1994.**
70. *Hebrew and Tel-Aviv Universities, Israel*, **Workshop in the structure of $G_{\mathbb{Q}}$, Mar. 16–23, 1994.**
71. *Kyoto, Japan*, **Workshop in Lie Representations of Absolute Galois Groups, Mar. 28–31, 1994.**
72. *MSRI, Berkeley: Dessins D' Enfant continued*, **Modular Towers and the Inverse Galois Problem, April 22-25, 1994.**
73. *UCI Partnership Network Symposium on Portfolios*, **Pathways from K-12 to the University through electronic portfolios, May 19,1994.**

5.5. Period Summer 1994–May 1996.

74–75. *Padova, Italy and Barcelona, Spain*, **lecture series Problems in the arithmetic of rational covers, July 8–12, 1994.**
76. *IMA Conference: Applications of Finite Fields, Essex England*, **Median and Extremal Weil bounds from Exceptional Covers, July 5-7, 1994.**
77. *Univ. of Florida*, **The future of braid rigidity, alg. sem., Oct. 4, 1994.**
78. *Algebra Seminar, Erlangen Institute*, **(A_n, S_n) realizations by poynomials over $\mathbb{Q}$, Nov. 10, 1994.**
79. *Graduate College at Essen, Germany*, **A gentle introduction to modular stacks, Nov. 29, 1994.**

80. *Oberseminar at Essen*, **The Branch Cycle Argument, Braid Rigidity and mysterious examples in the arithmetic of covers, Nov. 29, 1994.**
81. *AMS San Francisco meeting*, **Applications of the classification of finite groups to generalizations of modular curves, special session on group theory, Jan. 5-7, 1995.**
82. *UC Riverside*, **Feb. 7, 1995, How a modular curve tower encodes division point data on all elliptic curves.**
83. *AMS meeting, Orlando*, **Classification applications to the theory of families of covers: 1984–1994, March 18-21, 1995.**
84. *Lecture series at Lille, France*, **Applications of Modular Towers, March 25–April 22, 1995.**
85. *Israel Mathematical Congress, Hebrew University*, **Moduli properties of modular towers, May 24-26, 1995.**
86. *Technion University*, **Profinite sequences of upper half-plane quotients and the Hurwitz monodromy group, week of June 7, 1995.**
87. Workshop on Arithmetic Geometry, Heidelberg, Germ., Components of Modular Towers, June 18–21, 1995.
88. *Tel-Aviv University*, **The universal Artin-Schreier cover of a finite group and real points on modular towers, May 28, 1995.**
89. *Codes and Cryptography at Luminy*, **Implications for $\pi_1(\mathbb{A}^1)$ from the exceptional polynomials of Cohen-Müller-Matthews, June 21–26, 1995.**
90. *Glasgow conference on finite fields*, **Galois constant families of curves in characteristic p, July 12–14, 1995.**
91. *Journées Arithmétiques*, **Theta functions and the arithmetic of modular towers, July 16–20, 1995.**
92. *Santander, Spain*, **The classification of finite simple groups and cryptography, July 20, 1995.**
93. *Luminy conference on $G_{\mathbb{Q}}$ and the Grothendieck-Teichmüller group*, **Two lectures: Fields of definition of components of a modular tower, Aug. 28-Sept. 1, 1995.**
94. *Galois group workshop*, **Homogeneous space properties of non-homogeneous moduli spaces, U. Penn., Oct. 20–22, 1995.**
95. *Algebra Seminar*, **Univ. of South. Calif., May 1, 1996 What Modular Towers imply about the solution of the Inverse Galois Problem.**

5.6. June 1996 to June 2000.

96. *Arithmetic of Covers*, **Generalizing Serre's Galois action theorem on Tate Modules, Lille France, June 11–14, 1996.**
97. *Heidelberg Alg. Sem.*, **Braid group orbits on a Nielsen Tower, Heidelberg, Germ., July 1, 1996.**
98. *Essen, Algebra Sem.*, **Comparing Modular Towers for Alternating groups with modular curve towers, July 10, 1996.**
99. *Diophantine Conference, Eger, Hungary*, **July 28–Aug. 2, 1996, Specific Siegel covers for Hilbert's Irreducibility Theorem.**
100. *AMS Regional Meeting, Chatanooga, Tenn.*, **Generalizing Conway-Parker for effective construction of Braid Orbits, Oct. 12, 1996.**
101. *Inverse Galois Workshop at UFL*, **All levels of 3-cycle A_n-Modular Towers and negative implications for regular realizations, Oct. 14–20, 1996.**

102. *Oberwolfach meeting on finite fields*, **Finding points on moduli spaces over finite fields, Jan. 21–25, 1996.**
103. *Michigan Arith. Geom. Sem.*, **Practical uses for rational functions with A_n as monodromy group, April 2, 1997.**
104. *Oberwolfach meeting on Galois Groups and Fundamental Groups*, **Harbater–Matzat–Ihara, A complete description of Modular Towers of Alternating Groups, June 15-21, 1997.**
105. *Andrej Schinzel 60th Festschrift*, **Schinzel's contributions to understanding diophantine properties of spaces of polynomials, Stephan Banach International Mathematical Center, Warsaw, June 30–July 9, 1997.**
106. *AMS Summer Conference on Applications of the theory of covers to finite fields*, **Invariants for realization of arithmetic-geometric group pairs over finite fields, Seattle July 20–July 24, 1997.**
107. *3rd Gentner-Symposium: Field Arithmetic*, **Lessons from Hurwitz spaces appearing in solving practical problems, Tel-Aviv Univ., Oct. 7–21, 1997.**
108. *Algebra seminar at UCSB*, **Modular Towers and the Inverse Galois Problem, Nov. 21, 1997.**
109. *Oberwolfach meeting on Field Arithmetic*, **The components of the complete Modular Tower of A_n for 3-cycle branch cycles, July 12–18, 1998.**
110. *Y. Ihara Festschrift*, **A nilpotent version of Serre's OPEN IMAGE Theorem, July 21-30, 1998.**
111. *Cal Tech Algebra Seminar*, **How the Inverse Galois Problem generalizes Serre's Open Image Theorem, Oct. 29, 1998.**
112. *USC Algebra Seminar*, **Rational cusps on noncongruence towers of the j-line, Nov. 10, 1998.**
113. *AMS Meeting*, **Harbater-Mumford components on a Modular Tower, Session on the Inverse Galois problem, U. of Florida, Mar. 15–16, 1999.**
114. *University of Florida*, **The influence of Davenport's problem on the genus 0 problem, Mar. 26, 1999.**
115. *Number Theory seminar at Max Planck Institute*, **The Arithmetic and Group Theory of cusps on an A_5 Modular Tower, April 21, 1999.**
116. *Bar Ilan Univ., Israel*, **The Branch Cycle Lemma and classical generators of fundamental groups, May 5, 1999.**
117. *Hebrew Univ. Amitsur Seminar*, **Applications of the genus 0 problem and the differences between char. 0 and p, May 13, 1999.**
118. *Midrisha Mathematicae on Riemann Surfaces at the Institute for Mathematics, Hebrew Univ.*, **60th Birthday Conf. for Hershel Farkas, Alternating groups and theta functions, May 24, 1999.**
119. *Riemann Surface Worshop*, **Levels of a Modular Tower, Hebrew University, June 2, 1999.**
120. *Von Neumann Symposium*, **The arithmetic of branched covers, Berkeley Aug. 18, 1999.**
121. *Von Neumann Symposium*, **Rigidity, Berkeley Aug. 19, 1999.**
122. *Von Neumann Symposium*, **Cyclic cohomology and Modular Towers, Berkeley Aug. 27, 1999.**
123. *MSRI Workshop in Constructive Galois Theory*, **An Inverse Galois Problem application of linear equivalence classes of cusps attached to a Modular Tower, Oct. 6, 1999.**

124. *MSRI Workshop on Arithmetic Fundamental Groups*, **$\mathbb{R}$ and p-adic points on a Modular Tower, Oct. 13, 1999.**
125. *Cal Tech No. Theory sem.*, **Davenport's problem revisited, April, 2000.**

5.7. July 2000 to Present.

126. *Conference at UC Irvine: Heights on moduli spaces*, **Canonical heights on a Modular Tower, Oct. 15, 2000.**
127. Oberwolfach conf. on Finite Fields, Davenport Pairs versus strong Davenport pairs, Jan. 8-14, 2001.
128. *Seminaire Loeser Ecole Normale Superier*, **Determining motives from Weil Vectors, Jan. 15, 2001.**
129. Oberwolfach conf. on Field Arithmetic, Motivic relations attached to a generalized Davenport pair, Feb. 8-14, 2001.
130. Oberwolfach conf. on Arithmetic fund. groups, The mapping class group of a Modular Tower, July. 2-6, 2001.
131. *Oberwolfach*, **Configuration spaces and wildly ramified covers, Field Arithmetic, Feb. 7, 2002.**
132. *Cal Tech Algebra Seminar*, **Deformations of wildly ramified covers, Feb. 27, 2002.**
133. *Oberwolfach*, **Generalizing Grothendieck's Thm. to wildly ramified covers, Galois Theory of differential Fields, July 7, 2002.**
134. *University of Florida*, **Using modular curve-like properties of Modular Towers to realize new groups as Galois groups, Conference for John Thompson's 70th birthday, Nov. 4-6, 2002.**
135. *University of Florida*, **The j-function, modular curve towers and their extension to Modular Towers, Lectures series Jan-March 2003.**
136. Univ. Florida Algebra Seminar, j-line components and abelian Schur quotients, Jan. 28, 2003.
137. UFL conference Computational algebraic curves and cryptography, The implications of storing data from the generalized Davenport Problem, March 3–7, 2003.
138. UFL No. Th. Sem. Irrational characters of alternating groups and the partition function, March 18, 2003.
139. *Journee Arithmetique*, **Davenport Pairs and relations among Weil vectors, Graz, Austria, July 9, 2003.**
140. *Conference: Developments and perspectives in non-commutative number theory*, **Plenury Talk: Projective systems of $g - p'$ cusps on Modular Towers and their applications, Durham, England, 8/28/04th–5/09/04.**
141. *Chapel Hill, AMS meeting, Meeting #991*, **Session on Group actions on curves: Exceptional sequences of alternating group conjugacy classes, Oct 24-25, 2004.**
142. UCI algebra Sem. *Fiber products and the exceptional tower of a curve over a finite field*, **Nov. 4, 2003.**
143. Cal-Tech algebra seminar, The extension of constants series and exceptional covers, Nov. 6, 2003.
144. Lecture series at Okayama Japan: *1. Davenport pairs and pr-exceptionality; 2. Galois stratification; 3. Chow motives and diophantine statements from completions of number fields*, **Nov. 11, 12, 14, 2003.**

145. Groupes de Galois arithmetiques et differentiels, Luminy CIRM *Profinite geometry: Higher rank Modular Towers*, **March 12, 2004.**
146. Hebrew U. Alg. Sem, *Exceptional Towers and the Guralnick-Thompson genus 0 problem*, **March 16, 2004.**
147. Lille U., Alg. Sem., Two genus 0 problems of John Thompson, March 24, 2004.
148. Milan Workshop on Algebraic Curves, Families of alternating group covers and lifting invariants, April 2, 2004.
149. Oberwolfach Germany conference on finite fields, The exceptional tower attached to any normal variety over a finite field, Dec. 12, 2004.
150. Lubbock AMS meeting, Comparing cusps on modular curves to their Modular Tower generalization, April 9, 2005.
151. Five lectures on the profinite geometry and arithmetic of Modular Towers (MTs), London, Ontario: 1. Comparing cusps on modular curves to their MT generalization. 2. The weak Main Conjecture for $r = 4$ on a significant non- modular MT. 3. Colloquium: Cryptography and Schur's Conjecture. 4. What's in a MT: Weigel's p-Poincaré duality result applied to Alternating groups. 5. Serre's Open Image Theorem and exceptional cover towers., week of October 16, 2005.
152. Two lectures on profinite geometry of moduli spaces, College Stat. Texas: 1. Modular curves are to Modular Towers as dihedral groups are to all finite groups. 2. Mapping class groups and extensions of finite p-cohomological dimension., Oct. 24 and Oct. 28, 2005.
153. Profinite Arithmetic Geometry and related moduli spaces, April 3–7, 2006, *Red Lodge Montana*, **3 talks: 1. Introduction to the overall project joining group theory, arithmetic and moduli spaces, 2. Three modular curve-like properties of Modular Towers, and 3. A meaning for the phrase "Profinite Arithmetic Geometry."**
154. Oberwolfach Germ.: Profinite groups, Regular realizations of p-projective quotients, May 21st-27th, 2006.
155. Berkeley, Algebraic Geometry seminar, The Fried-Serre lifting invariant and its applications to Pure-cycle Nielsen classes, Oct. 17, 2006.
156. Berkeley, Number Theory seminar, The Exceptional Tower of a variety over a finite field, Oct. 18, 2006.
157. Arithmetic Geometry at RIMS, Pure-cycle Nielsen classes and the Main Modular Tower Conjecture, Kyoto Japan, Oct. 16–Nov. 1, 2006.
158. Polynomials over finite fields Workshop at Banff, Canada, *Cryptographic zeta-games with the exceptional tower of a variety*, **Nov. 18-23, 2006.**
159. Profinite groups section at the AMS sectional meeting in Davidson, North Carolina, *Extensions of mapping class group orbits and shift-incidence matrices*, **March 3–4, 2007.**
160. Univ. of Mich. Number Theory Sem, *Poincare series coming from Cryptology questions about Exceptional Towers*, **Mar. 26, 2007.**
161. Canad. Math. Soc., Session on Algebraic Stacks, Western Ontario, *Atomic Orbital-type cusps on Alternating Group Modular Towers*, **Dec. 08, 2007.**
162. Istanbul Turkey: 3 talks: 1. 6/17/08 Dihedral Groups: Modular Tower View of Modular Curves. 2. 6/18/09 Alternating groups

and Lifting Invariants. 3. 6/19/08 C(onway)F(ried)P(arker)V(oelklein) Connectedness Results.
163. Idaho State University, Zeta functions attached to algebraic equations, October 3, 2008.

6. COLLOQUIA PRESENTATIONS

6.1. Period 1969–74.

1. *Institute for Advanced Study*, **Fall 1969 and Spring 1973.**
2-3. *Princeton University*, **Spring 1969 and Spring 1970.**
4-7. *University of Michigan*, **Winter 1969, 1970, 1972.**
8. *University of Chicago*, **Winter 1969.**
9-10. *University of Colorado*, **Winter 1969 and 1970.**
11. *Massachusetts Institute of Technology*, **Winter1972.**
12. *SUNY at Stony Brook*, **Winter 1969.**
13. *Stevens Institute*, **Winter 1974.**
14. *City College of New York*, **Spring 1974.**
15. *UC Irvine*, **Spring 1974.**
16. *Cal. Tech.*, **Spring 1974.**

6.2. Period 1975–Fall 1987.

17. *U.C. Santa Barbara*, **Spring 1976.**
18. *Harvey Mudd-Claremont College*, **Spring 1976.**
19. *University of Colorado*, **Dec. 1976.**
20. *University of Michigan*, **Dec. 1976.**
21. *Harvard University*, **Dec. 1976.**
22. *Yale University*, **Dec. 1976.**
23. *University of Oregon*, **March 1977.**
24. *SUNY at Buffalo*, **March 1977.**
25. *California Institute of Technology*, **March 1977.**
26. *Tel-Aviv University*, **May 1977.**
27. *Hebrew University*, **May 1977.**
28. *Technion University*, **May 1977.**
28. *SUNY at Stony Brook*, **March 1978.**
30. *Yale University*, **March 1978.**
31. *Saarbrücken University*, **August 1981.**
32. *Wayne State University*, **March 1982.**
33. *University of Maryland*, **April, 1982.**
34. *Saarbrücken University*, **Oct. 1982.**
35. *Helsinki University*, **Nov. 1982.**
36. *Tel-Aviv University*, **March 1983.**
37. *Hebrew University*, **March 1983.**
38. *U.C.San Diego*, **April 1983.**
39. *Stanford University*, **June 1983.**
40. *Helsinki University*, **September 1984.**
41. *Saarbrücken University*, **September 1984.**
42. *Hebrew University*, **Oct. 1984.**
43. *Tel-Aviv University*, **Nov. 1984.**

44. *Technion University*, **Nov. 1984.**
45. *Boston University*, **Nov. 1985.**
46. *University of Connecticut*, **Nov. 1985.**
47. *Wesleyan University*, **Nov. 1985.**
48. *University of Florida*, **Nov. 1985.**

6.3. Period Fall 1986–Fall 1991.

49. *University of Florida*, **Finite correspondences and Jacobi's solution to Poncelet's problem, April 1986.**
50–51. *Tel-Aviv University*, **Nov. 7 and** *Hebrew University*, **Nov. 10, 1988, Generalizations of rigidity and modular curves.**
52–53. *SUNY at Albany*, **Dec. 13 and** *Univ. of Mass.*, **Dec. 15, 1988, Application of rigidity to the inverse Galois theory problem for 4 branch point covers.**
54. *University of Florida*, **September 14, 1989, Half-canonical classes and Serre's lifting invariant.**
55. *Univ. of South. Cal.*, **Oct. 18, 1989, Real fibers of covers of the sphere and Galois groups over $\mathbb{Q}$.**
56. *Essen, Germany*, **Moduli and the Inverse Galois Problem, April 24, 1990.**
57. *Heidelberg, Germany*, **Oct. 18,1990, Hilbertian–Profinite Fields: Expectations for Shafarevich's conjecture for $\mathbb{Q}^{\mathrm{ab}}$.**
58. *University of Florida*, **March 21, 1991, The inverse Galois problem and the RG-Hilbertian property.**
59. *Cal State Long Beach*, **April 5, 1991, Modern approaches to the inverse Galois problem.**
60. *Western Ontario University*, **July 17th, 1991, Extensions of $G(\bar{\mathbb{Q}}/\mathbb{Q})$ by explicit groups.**
61. *Hebrew University*, **Oct. 16, 1991, Representations of Lines in the K-12 Curriculum.**
62. *Inst. for Advanced Studies, Hebrew University*, **Nov. 12, 1991, Schur covers: Motivation for Riemann's existence theorem in positive characteristic.**

6.4. Period Winter 1992–2000.

63–64. *Cal Tech and Yale University*, **Fields with pro-free absolute Galois group and the inverse Galois problem, Jan. 17 and Feb. 26, 1992.**
65. *Penn. State*, **Two Talks: PRC fields and Shafarevich's Conjecture; and** *Describing the extension of constants in the Schur Problem*, **Feb. 27, 1992.**
66. *University of Michigan*, **Quotients and Subgroups of the Absolute Galois group of $\mathbb{Q}$, Mar. 23, 1992.**
67. *Institute for Advanced Studies, Hebrew University*, **April. 14, 1992, Mazur's Theorem and surprising difficulties with Dihedral Groups.**
68. *UN Las Vegas*, **Carlitz's conjecture on polynomial mappings over finite fields, Sept. 17, 1992.**
69. *University of Michigan*, **Could dihedral groups be harder than the Monster, Nov. 3, 1992.**

70. *U. Illinois at Chicago Circle*, **Inverse Galois Problem and Universal Frattini Covers, Mar. 31, 1993.**
71–72. *Purdue Univ.*, **Cryptology and Abhyankar's conjecture, Nov. 21, 1993.**
73. *University of Florida*, **Modular Towers: Generalizing the relation between dihedral groups and modular curves, Oct. 3, 1994.**
74. *Essen Institute, Germany*, **Median value curves over finite fields and cryptology, Nov. 30, 1994.**
75. *U. Heidelberg, Germany*, **Real points on modular stacks: An example from the theory of theta functions, Dec. 9, 1994.**
76. *Erlangen-Nürnberg Institute, Germany*, **Modular representations and the construction of moduli spaces, Dec. 13, 1994.**
77. *Bourdeaux, France*, **April 14, 1995, Real points on modular towers and the Grothendieck-Teichmuller group.**
78. *Erlangen, Germ.*, **Nonzero θ-nulls on families of curves, June 13, 1995.**
79. *Aachen, Germ.*, **Universal Artin-Schreier covers and real points on Modular Towers, June 26, 1995.**
80. *Essen, Germ.*, **Homogeneous spaces and Modular Towers, June 29, 1995.**
81. *Heidelerg, Germ.*, **A_5 Modular Towers and Serre's Open Mapping Theorem, July 3, 1996.**
82. *Florida State Univ.*, **θ functions on an A_5 Modular Tower, Oct. 18, 1996.**
83. *University of Florida*, **Galois realizations of characteristic Frattini quotients and the definition of Modular Towers, March 21, 1997.**
84. *University of Michigan*, **Schur multipliers and the Inverse Galois problem for perfect groups, April 2, 1997.**
85. *UC Riverside*, **Nilpotent fundamental groups and braid actions, Feb. 23, 1999.**
86. *University of Florida*, **Real and p-adic uniformization of a Modular Tower, Mar. 26, 1999.**
87. *Essen, Germ.*, **A Nilpotent Weil pairing and generalizing Serre's open image theorem, Institute for Experimental Mathematics, April 15, 1999.**
88. *Bonn, Germ.*, **Cusps on a Modular Tower, Max Planck Inst., April 21, 1999.**
89. *Graz, Austria*, **Number Theory and the contrast between the genus 0 problem in Characteristics 0 and p, April 23, 1999.**
90. *Tel-Aviv Univ.*, **Real Points on Hurwitz spaces and uniformization of a Modular Tower, May 13, 1999.**

6.5. Period Winter 2001–present.
91. *Max Planck Inst.*, **Cusps on a Modular Tower, Jan. 17, 2001.**
92. *RIMS, Japan*, **Three lectures on Hurwitz monodromy, spin separation and higher levels of a Modular Tower, Oct. 28–31, 2001.**
93. *Univ. Florida*, **What Gauss told Riemann about Abel's Theorem, Feb. 19, 2003.**
94. *RIMS II, UCI*, **Two lectures on θ-characteristic and j-line covers, May 07-10, 2003.**

95. Okayama Japan: The exceptional tower of a curve over a finite field, Nov. 10, 2003.
96. Tel-Aviv U. Serre's Open Image Theorem as a rank 2 Modular Tower, March 15, 2004.
97. Bordeaux U. The extension of constants series and towers of exceptional covers, March 16, 2004.
98. Pavia U., Sequences of j-line covers, March 31, 2004.
99. MSU Bozeman, Galois Theory and Cryptography, Nov. 19, 2004.
100. London Ont., Cryptography and Schur's Conjecture, Oct. 19, 2005.
101. U. of Houston, Periods of cryptographic encodings, Oct. 26, 2005.
102. Univ. of Michigan, How pure-cycle Nielsen classes Test the Main Modular Tower Conjecture, March 27, 2007.
103. Idaho State University, Separated variable equations and Finite Simple Groups, Oct. 2, 2008.
104 Univ. of Wisconsin, A Context for all the Classical Connectedness Results for Hurwitz spaces, Oct. 8, 2009.

7. EDUCATION PRESENTATIONS AND PANELS

7.1. Period 1990-1992.

1. *Coalition of Essential Schools*, **Aug. 1990, Sliding quarters – Curriculum responses to description of scientific phenomena.**
2. *Center for Critical Thinking*, **Jan. 22, 1991, Math and Science Together—different problem solving approachs.**
3. *Century High School*, **March 19, 1991, 3 hour workshop, What Hypercard has to say to the Mathematics Teacher and Hypercard and its relation to the Macintosh System.**
4. *Cal State Los Angeles*, **May 3 and 4, 1991, judge for the Physical Sciences and Mathematical Sciences Fifth Annual California State University Student Research Competition.**
5. *Center for Critical Thinking*, **May 14, 1991, Using a computer to draw graphs in a classroom environment.**
6. *UCI Summer Bridge Program*, **July 23rd, 1991, Resources for Minority Students at a Research University.**
7. *UCI Summer Mathematics Institute*, **August 3rd–23rd, 1991, The Sounds of Science: Technology Course using Soundworlds .**

7.2. Period 1992-present.

8. *UCI SummerMathematics Institute*, **Aug. 1–21, 1992, Interactive Media and Electronic Blackboards .**
9. *Orange County Math. Council—Irvine Valley Coll.*, **Integrating 9th–10th grade Math.—Too Many lines in the Curriculum", Oct. 3rd, 1992.**
10. *Currie Middle School*, *Integrating journals with assessment*, **Tustin, CA, Dec. 9, 1992.**
11. *U. Illinois at Chicago Circle*, **Time for Journals/Portfolios: interactive-media, Mar. 30, 1993.**
12. *UCI Summer Bridge Program*, **July 24, 1993, Panel Chair: Resources for Minority Students at a Research University.**

13. *Capistrano USD*, **April 17, 1994, E-mail as a teacher–student communication enhancement.**
14. *Partnership Network*, **May 19, 1994, E-mail technology's part in the creation of student portfolios.**
15. *Introduction of Ken Millett to the Cascade Network*, **Sept. 8, 1994, The Goals of the Cascade Network to enhance student-teacher communication.**
16. *AMS San Francisco meeting*, **Electronic portfolios: Enhancing student-teacher interactions, special session on education, Jan. 5-7, 1995.**
17. *Chancellor's Ed Tech committee*, **Feb. 15, 1995, Truly powerful office hours using an internet account.**
18. *Asynchronous Learning Network Conference at Sloan Found*, **Mar. 24, 1995, Internet accounts as an educationalist's research tool.**
19. *WolfenButtel, Germany*, **May 11, 1995, Coordinating student intellectual records over the internet.**
20. UCI Beckman Center, Jan. 26, 1996, Interactive Questionnaires as continuous assessment tools.
21. *UCI–Partnership Presentation*, **March 26, 1996, Creating a newletter over the Internet for parents of K-12 students.**
22. *Exec. Vice Chancs. Outreach Forum*, **Creating enhanced evaluation instruments for college courses, April 6, 1996.**
23. *Phys. Sci. UCI*, **April 20, 1996, Celebrate Technology at UCI.**
24. *UCI Summer Math. Inst.*, **The** 4×4 **Tile Game and introducing Group Theory in High School, Aug. 15, 1996.**
25. *UCI Summer Math. Inst.*, **Relating the American High School exam and the standard HS Mathematics Curriculum, Aug. 13, 1997.**
26. *Santa Ana Teachers pre-Algebra Presentation*, **The algebra behind buckyballs, Jan. 22, 2000.**
27. *COSMOS Summer Institute I, UCI*, **Abelian and non-abelian groups in coding theory, four lectures, July, 2000.**
28. *COSMOS Summer Institute II, UCI*, **Euclidean, spherical and hyperbolic geometry, eight lectures, July, 2001. 28.** *COSMOS Summer Institute III, UCI*, **The algebra and geometry of Cryptography, eight lectures, July, 2002.**
29. MSU-Billings, Presenting the Continuous Assessment Office, Jan. 25, 2005.
30. MSU-Billings, seminar on Assessing a Quality Education, April 2005.
29. Yellowstone Art Museum, February 8 and 15, 2010, **Enhancing YAM Awareness**: Personalizing information using UNIX Technology.
30. Mind Institute, March 29, 2010, Santa Ana Ca. **Lines in the Curriculum**: A persistent obstruction to achievement connecting algebra and geometry,

8. COURSES—TEACHING

8.1. Period 1969–74. 1969–70: Math 3 - Calculus II, Algebraic No. Theory, Complex Variables; **1970–71:** Seminar in Topology, Riemann Surfaces; **1971–72:** Math 2-Calculus I, Algebraic Geometry; **1973–74:** Math 121–Algebra II.

8.2. Period 1974–Present. 1974–75: Math 2ABC–Calculus I, Math 5B–Math for Social and Natural Science, Math 121A–Topics in Algebra; **1975–76:** Math 220ABC–Analytic Function Theory, Math 199AC–Special Studies in Mathematics, Math 299A–Reading and Research, Math 105A–Numerical Analysis; **1976–77:** Math 199A–Special Studies in Mathematics, Math 237AB–Algebraic No. Th., Math 299A–Reading and Research, (Sabbatical); **1977–78:** Math 3C–Calculus II, Math 199A–Special Studies in Mathematics, Math 235A–Algebraic Geometry, Math 299A–Reading and Research, (Sabbatical); **1978–79:** Math 140AB–Advanced Calculus, Math 3ABC; **1979–80:** Math 2C, Math 121A–Finance Mathematics; **1980–81:** Math 230ABC, 299ABC; **1981–82:** Math 3AB, Math 230ABC–Graduate Algebra, 299A; **1982–83:** (On Leave–Fall) 3AB, 299AC; **1983–84:** Math 3AB, 129A–Statistics, 230ABC **1984–85:** (On Leave–Fall) 3AB; **1985–88:** (On Leave); **Winter-Spring '89:** Math 3AB—Linear Algebra and Vector Calculus. **Fall '89 Winter '90:** 220AB—Complex Variables; 299ABC (Gabrielle Windsor, James deCastillo). **Fall '90–Spring '91** Math 234ABC, 2nd year graduate algebra: *Field Arithmetic*, Putnam exam training session; 299BC (Marcus Kroencke, Mark Debonis); **Summer 1991** *UCI Summer Mathematics Institute*, August 3rd–23rd, 1991, **The Sounds of Science: Technology Course using Soundworlds** . **Fall '91-Win. '92** Math 299AB (Marcus Kroencke, David Epstein), **Winter '92** Math 2B—Integral Calculus, Math 2D—Vector Analysis. **Fall '92-Win. '93** Math 199AB (James Nunez), Math 299AB (James del Castillo), 2D-2E *Vector and Multivariate Calculus*, 234B *Riemann's existence theorem and absolute Galois groups*. **Fall '93-Sp. '94** Math 199AB (James Nunez and Karen Smiley), Math 299ABC (James del Castillo, Fariba Barez and Mike Adams), 2D *Vector and Multivariate Calculus*, 230ABC *Graduate Algebra*. **Fall '95-Sp. '96** Math 299ABC (James del Castillo, Javier Marquez, Darren Semmen), 2D (Fall), 230ABC. **Fall '96-Sp. '97** Math 299ABC (James del Castillo, Paul Bailey, Darren Semmen), 180B (Winter), 234ABC. **Fall '97-Sp. '98** 230ABC, 180C (Spring), Math 299ABC (Paul Bailey, Darren Semmen). **Fall '98-Win. '99** 234AB, Math 299ABC (Paul Bailey, Darren Semmen).

9. RESEARCH STUDENTS

1. *C. Adimoolam*, (SUNY) Stony Brook, 1972—Algebraic Geometry, **Complex multiplication of Abelian varieties in positive characteristics**, postdoctoral at Tata Institute.
2. *A. Ginensky*, 1976, **Effective Solution of Diophantine Problems**, postdoctoral at University of Chicago.
3. *R. Biggers*,1981, **Alg. Geometry and Combinatorial Group Theory with Applications to the Hurwitz Monodromy Group**, accepted Associate Professorship at University of Wisconsin, Fall 1989.
4. *Thai Bui*, 1990, **Buffon's needle test versus infinite series**, won Senior Mathematics sect. of **35th Orange County Science and Engineering Fair**.
5. *Gabrielle Windsor*, Summer 1990, **Pictures of Harmonic maps using Mathematica**, M(inority) S(ummer)R(esearch) I(nternship)P(rogram) sponsored by the Office of Research and Graduate Studies.
6. *James de Castillo*, Candidacy May 1994 **Ax's problem on $C_{1,d}$-fields**.
7. *Forest Zachman*, Irvine High Senior, **Blackboards—Hypercard stacks to replace a traditional classroom**, Winter 1992.

8. *James Nunez*, UCI Senior, Minority Student Internship, **Carlitz's conjecture and Cryptology**, Fall 1992.
9. *Fariba Barez*, **Wildly ramified fields and Cryptography**, preparing for admission to candidacy August 1994.
10. *Mike Adams*, **Applications of the universal frattini cover in the inverse Galois problem**, admitted to candidacy June 1994.
11. *Matthew Peterson*, UCI junior in engineering, **World WallPaper and applications of the tangent bundle to the sphere**.
11. *James de Castillo*: Won Presidential Dissertation Award, May 1995 *Proof of Ax's conjecture on $C_{1,d}$-fields for $d = 6$*; won James M. Connelly Mathematics Department award for outstanding research and teaching for a graduating student. PhD: June 1997.
12. *Tai Kaufman*, Master's of mathematics with teacher credential and thesis: *Correlations between elements in symmetric groups*, June 2001. Studied after at Hebrew University.
13. Paul Bailey, Completed PhD Sept. 2002, **Incremental ascent of a Modular Tower via Branch Cycle design**; Tenure at University of Southern Arkansas.
14. Darren Semmen, *Asymptotics for universal p-Frattini covers*, PhD Sept. 2003. Post-doctoral at University of Florida.

10. SERVICE: UNIVERSITY AND DEPARTMENTAL

10.1. University Service. 1973–74: Affirmative Action Committee on female and minority hiring, Stony Brook; **1974–75:** Advisory Committee for Promotion to Full Professor, UCI; **1976–77:** Academic Senate—Representative chancellor's Advisory Committee on Minority Affairs, Chancellor's Advisory Committee on Affirmative Action; **1977–78:** Academic Senate and Committee for Judicial Review; **1978–79:** Committee on Privilege and Tenure; **1984–86:** Director of UCI Summer Mathematics Institute and of the California Math Project at UCI; UC-Cal State Remediation Conference at Kellogg West in Pomona; **1983–85:** Radius Committee; **1984–85:** PASS Advisory Committee, Physical Sciences Remediation Committee; **1984–86:** UCI Science Advisory Board. **1985–86:** UC Representative at the International Conference on Math Ed.—University of Chicago, March 28-29, Committee for Community Education, UCI representative to Irvine USD to aid in recruitment of Bill Page for Political Science Department, February 21, UC math faculty representative for dinner with Marina High, Faculty for Academic Affairs—February 27, University grievance panel on discharge of an undergraduate—March 1986, Participant and presenter for ł"Dialogue on Mathematics Preparation,"̊College Board conference run by STEP, April 10-11; **1989:** Panel member for ł"Summer Bridge program"̊run by Christine Moseley of Academic Planning and Career Placement; **1989–92:** NSF Crossover Teacher Project Advisory Board, PIs Larry Chrystal, Mare Taagepera and George Miller; **1990–92:** Committee on Community Education (2 year term); UCI Presidential Grants for School Improvement (PGSI) representative (2 year term; Search committee for Office of Teacher Education Director; Two search committees for Assoc. Prof. in Mathematics Education, Science Education or Instructional Technology; Panel member for ł"Summer Bridge program"̊run by Christine Moseley of Academic Planning and Career Placement (June 23rd, 1991); Advisory Board for ł"Partnership Dialog,"̊School Partnerships Program for Manuel Gomez, Associate Vice-Chancellor;

All University Faculty Conference on Recruitment in Mathematics, April 19th-20th, 1991 in San Francisco; Panel Chair for Christine Moseley's l"Summer Bridge program"̊(June 23, 1993). **1993–95:** Prepared student presenters Matthew Peterson, **Using topology to avoid ethnocentric coordinates for maps of portions of the world** and James Nũnez, **Investigation and characteristics of exceptional polynomials and their use in data security** for their talks in the May 21, 1994 Campus Wide Honors Program Undergrad. research symposium; Panel Chair for Christine Moseley's l"Summer Bridge program"̊(June 23, 1994); Keynote Speaker for Joe Maestes's EOP-SAA Parent/Student Preparation Workshop (June 23, 1994). **1999–2001:** Four lectures uly, 2000 for the COSMOS Summer Institute I, UCI; eight lectures for the COSMOS Summer Institute II, COSMOS Summer Institute II, UCI, *Euclidean, spherical and hyperbolic geometry*, eight lectures, July, 2001; Campus Fullbright selection committee review panels; Office of the Provost and Senior Vice President of Academic Affairs appointsment to the Advisory Committee of the California Mmathematics Project. **2002–2005:** COSMOS Summer Institute III, UCI, *The algebra and geometry of Cryptography*, eight lectures, July, 2002; CORCRL committee in UCI campus; UC ITTP committee; UC Faculty representative to the California Mathematics Project.

10.2. Departmental Service. 1974–02: Chairman of Committee for Institution of Math Department Course in Numerical Analysis, Graduate Studies Committee Chairman of Sub-Committee for Revision of Graduate Studies Program; **1975–76:** Chairman of Master's Program Committee; **1977–83:** Chairman of Graduate Studies Committee; **1974–79:** Director of the Putnam Exam Seminars; **1978–86:** Department Executive Committee; **1980–83:** Chairman of Recruitment Committee, Applied Math Search Committee, Colloquium Chairman; **1989–90:** Chair of Departmental Affirmative Action committee; Executive Committee; Chair of Master Program with Teacher Credential; Recruitment committee; Graduate Studies committee; Chair of November American Math Society meeting at UCI; Computer Committee. **1990–91:** Chair Recruitment committee; Colloquium Chair; Chair of Departmental Affirmative Action committee; Chair of Master Program with Teacher Credential; Executive Committee; Graduate Studies committee; Computer Committee. **1991–92:** Executive Committee; Graduate Studies committee (ex-officio); Computer Committee; Chair of Departmental Affirmative Action committee; Chair of Master Program with Teacher Credential. **1992–95:** Chair of Algebra Seminar; Colloquium Co-Chair: with Weian Zheng; review committee chair for Eklof and Nesin. **1995–96:** Recruitment Committee, Chair selection comittee, Arithmetic Geometry and Theta Function Seminar Chair. **1996–97:** Recruitment Committee, Arithmetic Geometry and Theta Function Seminar Chair. **1997–02:** Recruitment Committee (99–02), Colloquium Committee Chair (97), Arithmetic Geometry and Theta Function Seminar Chair (97-02). Motivic Fundamental Groups seminar (97-99), Co-Chair.

11. PUBLICATIONS: RESEARCH PAPERS AND BOOKS

Favorite all-time theorems: Siegel's proof that affine curves of genus exceeding 0 have only finitely many integral points; Deligne's proof of the Weil conjectures for K3 surfaces; Connes' Signature Theorem using cyclic cohomology.

11.1. Period 1969–79.

1. with R. MacRae, **On the invariance of chains of fields**, *Illinois Journal of Mathematics,***13** (1969), 165–171.
2. with R. MacRae, **Variables separated curves**, *Math. Ann.***180** (1969), 220–226.
3. Arithmetical properties of value sets of polynomials, *Acta Arith.* **15** (1969), 91–115.
4. **On a conjecture of Schur**, *Mich. Math. Journal* **17** (1970), 41–55.
5. **On the diophantine equation** $f(y) = x$, *Acta Arith.* **19** (1971), 79–87.
6. **Degeneracy of the Branch Locus in Hurwitz Schemes**, *Proceedings of the 1972 Conference in Number Theory in Boulder, Colorado*, AMS Publication (1973), 8 pages.
7. **Naive (non-abelian) class field theory for local function fields, and Chapter 8 of Riemann's Existence Theorem in Positive Characteristic**, 65 page preprint from 1972.
8. with A. Schinzel, **Reducibility of quadrinomials**, *Serpinski Mem. Acta Arith.* **XXXI** (1972), 153–171.
9. with J. Smith, **Primitive Groups, Moore Graphs, and Rational Curves**, *Michigan Math Journal* **19** (1972), 341–347.
10. **Field of definition of function fields and a problem in the reducibility of polynomials in two variables**, *Illinois J. of Math.* **17**, (1973), 128–146.
11. **A theorem of Ritt and related diophantine problems**, *Crelles J.* **264**, (1973), 40–55.
12. **On Hilbert's irreducibility theorem**, *J. of No. Theory* **6** (1974), 211–232.
13. **On a theorem of MacCluer**, *Acta Arith.* **XXV** (1974), 122–127.
14. **Arithmetical properties of function fields (II); generalized Schur problem**, *Acta Arith.* **XXV** (1974), 225–258.
15. with G. Sacerdote, **Solving diophantine problems over all residue classes of a number field**, *Annals Math.* **104** (1976), 203–233: **mysite**/paplist-ff.
16. with M. Jarden, **Stable extensions and Fields with Global Density Property**, *Canad. J. Math.* **4** (1976), 774–787.
17. **Fields of Definition of Function Fields and Hurwitz Families and; Groups as Galois Groups**, *Communications in Algebra* **5** (1977), 17–82.
18. **Galois groups and Complex Multiplication**, *Trans.A.M.S.* **235** (1978), 141–162.
19. with M. Jarden, **Diophantine Properties of Subfields of** $\mathbb{Q}$, *Amer. J. Math.* **100** (1978), 653–666.
20. **Poncelet Correspondences: Finite Correspondences; Ritt's Theorem; and the Griffiths-Harris Configuration for Quadrics**, *Journal of Algebra* **55** (1978), 1–27.
21. **Toward a General Theory of Diophantine Problems with Application to** p**-adic Fields and Fields of Finite Co-Rank**, 108 page preprint, 1978.

11.2. Period 1980–Fall 1987.

22. **Exposition on an Arithmetic-Group Theoretic Connection via Riemann's Existence Theorem**, *Proceedings of Symposia in Pure Math: Santa Cruz Conference on Finite Groups, A.M.S. Publications* **37** (1980), 571–601.

23. **On automorphism groups of algebraic number fields**, *PAMS* **80** (1980), 386–388.
24. with Y. Ershov, **Frattini covers and projective groups without the extension property**, *Math Ann.* **253** (1980), 233–239.
25. with R. Biggers, **Moduli Spaces of Covers of $\mathbb{P}^1$ and Representations of the Hurwitz Monodromy Group**, *J. für die reine und angew. Math.* **335** (1982), 87–121.
26. **On Principal Ideals and Smooth Curves**, *J. of Alg.* **74** (1982), 124–139.
27. with D. Harran and M. Jarden, **Galois Stratifications over Frobenius Fields**, *Advances in Mathematics* **51** (1984), 1–35.
28. with J. Smith, **Irreducible discriminant components of coefficient spaces**, *Acta Arith.* **XLIV** (1984), 59–72.
29. **The Nonregular Analogue of Tchebotarev's Theorem**, *PJM* **112** (1984), 303-311.
30. **Constructions arising from Neron's high rank curves**, *TAMS* **281** (1984), 615–631.
31. **On the Sprindžuk-Weissauer approach to universal Hilbert subsets**, *Israel Journal of Mathematics* **51** (1985), 347–363.
32. **On reduction of the inverse Galois group problem to simple groups**, *Proceedings of Rutgers Group theory, 1983-84, ed. D. Gorenstein, R. Lyons, M. O'Nan, C. Sims, M. Aschbacher and W. Feit, Cambridge Univ. Press* (1985) 289–301.
33. with S. Friedland, **Discriminant criteria for reducibility of a polynomial**, *Israel Journ.* **54** (1986), 25–32.
34. with H. Farkas, **The $g-1$-support cover over the canonical locus**, *Journ. d'Anal.* **91** (1986), 62–31.
35. with R. Biggers, **Irreducibility of moduli spaces of cyclic unramified covers of genus g curves**, *TAMS* **295** (1986), 1–12.
36. with R. Lidl, **On Dickson polynomials and Redei functions**, *Proceedings of May 1986 conference in Salzburg,* **5** (1987), 1–12.

11.3. Period Fall 1987–1994.

37. **Irreducibility results for separated variables equations**, *Journal of Pure and Applied Algebra* **48** (1987), 9–22.
38. **Combinatorial computation of moduli dimension of Nielsen classes of covers**, *Contemporary Mathematics* **89** (1989), 61–79.
39. with H. Völklein, **Unramified abelian extensions of Galois covers**, *Proceedings of Symposia in Pure Mathematics, Part 1* **49** (1989), 675–693.
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Math. Dept., Emeritus, UC Irvine
E-mail address: mfried@math.uci.edu, mfri4@aol.com