

# PUBLICATIONS: RESEARCH PAPERS AND BOOKS

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ABSTRACT. 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.

## 1. RESEARCH PAPERS

### 1.1. 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 quadrimonomials**, *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 R. Lidl, **On Dickson Polynomials and Rdei Functions**, Contributions to General Algebra 5, Proceedings of the Salzburg Conference, Mai 29 – June 1, 1986 Verlag Holder-Plchler-Tempsky, Wien 1987 - Verlag B. G. Teubner, Stuttgart, 139–149.
16. G. Sacerdote, **Solving diophantine problems over all residue classes of a number field**, *Annals Math.* **104** (1976), 203–233:  
#7 <http://www.math.uci.edu/~mfried/paplist-ff.html>
17. with M. Jarden, **Stable extensions and Fields with Global Density Property**, *Canad. J. Math.* **4** (1976), 774–787.
18. **Fields of Definition of Function Fields and Hurwitz Families and; Groups as Galois Groups**, *Communications in Algebra* **5** (1977), 17–82.
19. **Galois groups and Complex Multiplication**, *Trans.A.M.S.* **235** (1978), 141–162.
20. with M. Jarden, **Diophantine Properties of Subfields of  $\mathbb{Q}$** , *Amer. J. Math.* **100** (1978), 653–666.
21. **Poncelet Correspondences: Finite Correspondences; Ritt’s Theorem; and the Griffiths-Harris Configuration for Quadrics**, *Journal of Algebra* **55** (1978), 1–27.
22. **Toward a General Theory of Diophantine Problems with Application to  $p$ -adic Fields and Fields of Finite Co-Rank**, 108 page preprint, 1978.

## 1.2. Period 1980–Fall 1987.

23. **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.
24. **On automorphism groups of algebraic number fields**, *PAMS* **80** (1980), 386–388.
25. with Y. Ershov, **Frattini covers and projective groups without the extension property**, *Math Ann.* **253** (1980), 233–239.
26. 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.
27. **On Principal Ideals and Smooth Curves**, *J. of Alg.* **74** (1982), 124–139.
28. with D. Harrran and M. Jarden, **Galois Stratifications over Frobenius Fields**, *Advances in Mathematics* **51** (1984), 1–35.
29. with J. Smith, **Irreducible discriminant components of coefficient spaces**, *Acta Arith.* **XLIV** (1984), 59–72.
30. **The Nonregular Analogue of Tchebotarev’s Theorem**, *PJM* **112** (1984), 303–311.
31. **Constructions arising from Neron’s high rank curves**, *TAMS* **281** (1984), 615–631.
32. **On the Sprindžuk-Weissauer approach to universal Hilbert subsets**, *Israel Journal of Mathematics* **51** (1985), 347–363.
33. **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.
34. with S. Friedland, **Discriminant criteria for reducibility of a polynomial**, *Israel Journ.* **54** (1986), 25–32.
35. with H. Farkas, **The  $g-1$ -support cover over the canonical locus**, *Journ. d’Anal.* **91** (1986), 62–31.

36. with R. Biggers, **Irreducibility of moduli spaces of cyclic unramified covers of genus  $g$  curves**, *TAMS* **295** (1986), 1–12.

### 1.3. 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.
40. **Arithmetic of 3 and 4 branch point covers: a bridge provided by noncongruence subgroups of  $SL_2(\mathbb{Z})$** , *Prog. in Math. Birkhauser* **81** (1990), 77–117.  
#21 <http://www.math.uci.edu/~mfried/paplist-cov.html>
41. with P. Debes, **Rigidity and real residue class fields**, *Acta Arith* **56** (1990), 13–45:  
#22 <http://www.math.uci.edu/~mfried/paplist-cov.html>
42. with P. Debes, **Arithmetic variation of fibers in families: Hurwitz monodromy criteria for rational points on all members of the family**, *Crelles J.* **409** (1990), 106–137:  
#23 in <http://www.math.uci.edu/~mfried/paplist-cov.html>.
43. with H. Völklein, **The inverse Galois problem and rational points on moduli spaces**, *Math. Annalen* **290** (1991), 771–800:  
#24 <http://www.math.uci.edu/~mfried/paplist-cov.html>.
44. with H. Völklein, **The embedding problem over an Hilbertian-PAC field**, *Annals of Math* **135** (1992), 469–481:  
#25 <http://www.math.uci.edu/~mfried/paplist-cov.html>.
45. with P. Debes, **Nonrigid situations in constructive Galois theory**, *Pacific Journal* **163** #1 (1994), 81–122:  
#29 <http://www.math.uci.edu/~mfried/paplist-cov.html>.
46. with R. Guralnick and J. Saxl, **Schur Covers and Carlitz’s Conjecture**, *Israel J. Thompson Volume* **82** (1993), 157–225:  
#10 <http://www.math.uci.edu/~mfried/paplist-ff.html>.
47. with D. Haran and H. Völklein, **Absolute Galois group of the totally real numbers**, *C.R. Acad. Sci. Paris, t.* **317** (1993), 95–99.
48. with M. Jarden and D. Haran, **Counting points on definable sets over finite fields**, *Israel J. Math.* **85** (1994), 103–133.
49. with H. Völklein, **The absolute Galois group of a Pseudo-Real Closed Field**, *Israel J. Math.* **85** (1994), 85–101.
50. with D. Haran and H. Völklein, **Real Hilbertianity and the field of totally real numbers**, *Cont. Math., proceedings of Arizona conf. in Arith. Geom.* **174** (1994), 1–34.
51. **Global construction of general exceptional covers, with motivation for applications to coding**, *G.L. Mullen and P.J. Shiue, Finite Fields: Theory, applications and algorithms, Cont. Math.* **168** (1994), 69–100.

### 1.4. Period Fall 1995–Present.

52. with S. Cohen, **The Carlitz-Lenstra-Wan conjecture on Exceptional Polynomials: An Elementary Version**, *Finite Fields and their applications, Carlitz volume 1* (1995), 372–375.
53. **Contributions of the classification of finite simple groups to technology**, *Report of the National Research Council* (1995).
54. **Extension of Constants, Rigidity, and the Chowla-Zassenhaus Conjecture**, *Finite Fields and their applications, Carlitz volume 1* (1995), 326–359:  
#30 <http://www.math.uci.edu/~mfried/paplist-cov.html>.
55. **Additions to a Report on J.P. Serre's Topics in Galois Theory**, 1992, Bartlett and Jones Publishers, BAMS 30 #1 (1994), 124–135. ISBN 0-86720-210-6.  
#31 <http://www.math.uci.edu/~mfried/paplist-cov.html>.
56. **Enhanced review of J.P. Serre's Topics in Galois Theory, with examples illustrating braid rigidity** see #2 in *Reviews*: #31 <http://www.math.uci.edu/~mfried/paplist-cov.html>. **Recent Developments in the Galois Problem**, *Cont. Math., proceedings of AMS-NSF Summer Conference, Seattle* **186** (1995), 15–32.  
#32 <http://www.math.uci.edu/~mfried/paplist-cov.html>.
57. Introduction to Modular Towers: Generalizing dihedral group–modular curve connections, **Recent Developments in the Inverse Galois Problem**, *Cont. Math., proceedings of AMS-NSF Summer Conference 1994, Seattle* **186** (1995), 111–171:  
#3 <http://www.math.uci.edu/~mfried/paplist-mt.html>.
58. with Y. Kopeliovic, **Applying Modular Towers to the inverse Galois problem**, *Geometric Galois Actions II Dessins d'Enfants, Mapping Class Groups and Moduli* **243**, London Mathematical Society Lecture Note series, (1997) 172–197:  
#4 <http://www.math.uci.edu/~mfried/paplist-mt.html>.
59. with M. Jarden,  **$\Sigma$ -Hilbertian fields**, *PJM* **185** (1998) 307–313.
60. **Variables Separated Polynomials and Moduli Spaces**, No. Th. in Progress, eds. K.Gyory, H.Iwaniec, J.Urbanowicz, proceedings of the Schinzel Festschrift, Summer 1997 Zakopane, Walter de Gruyter, Berlin-New York (Feb. 1999), 169–228:  
#35 <http://www.math.uci.edu/~mfried/paplist-cov.html>.
61. with P. Debes, **Integral specializations of families of rational functions**, *PJM* **190**, 1999, 45–85:  
#36 <http://www.math.uci.edu/~mfried/paplist-cov.html>.
62. **Curves over finite fields**, *Cont. Math., proceedings of AMS-NSF Summer Conf. 1997, Editor M. Fried, Seattle* **245** (1999), ix–xxxiii:  
#14 <http://www.math.uci.edu/~mfried/paplist-ff.html>.
63. with E. Klassen and Y. Kopeliovic, **Alternating groups as monodromy groups of genus one covers**, *PAMS* **129** (2000), 111–119:  
#37 <http://www.math.uci.edu/~mfried/paplist-cov.html>.
64. Prelude: Arithmetic fundamental groups and noncommutative algebra, *Proceedings of Symposia in Pure Mathematics*, **70** (2002) editors M. Fried and Y. Ihara, 1999 von Neumann Conference on Arithmetic Fundamental Groups and Noncommutative Algebra, August 16–27, 1999 MSRI, vii–xxx:  
#2 <http://www.math.uci.edu/~mfried/paplist-mt.html>.
65. with P. Bailey, **Hurwitz monodromy, spin separation and higher levels of a Modular Tower**, *Proceedings Symposia in Pure Mathematics* **70** (2002) editors M. Fried and

Y. Ihara, 1999 Arithmetic Fundamental Groups and Noncommutative Algebra at MSRI, 79–221:

#5 <http://www.math.uci.edu/~mfried/paplist-ff.html>.

66. with Arianne Mézard, **Configuration spaces for wildly ramified covers**, in Proceedings of Symposia in Pure Mathematics **70** (2002) editors M. Fried and Y. Ihara, 1999 Symposium on Arithmetic Fundamental Groups and Noncommutative Algebra, August 16-27, 1999 MSRI, 353–376:

#16 <http://www.math.uci.edu/~mfried/paplist-ff.html>.

67. **Moduli of relatively nilpotent extensions**, Inst. of Math. Sci. Analysis 1267, June 2002, Communications in Arithmetic Fundamental Groups, 70–94:

#8 <http://www.math.uci.edu/~mfried/paplist-ff.html>.

68. with W. Aitken and L. Holt, **Davenport Pairs over finite fields**, PJM **216**, No. 1 (2004), 1–38:

#15 <http://www.math.uci.edu/~mfried/paplist-ff.html>.

69. **Relating two genus 0 problems of John Thompson**, Volume for John Thompson’s 70th birthday, in Progress in Galois Theory, H. Voelklein and T. Shaska editors 2005 Springer Science, 51–85:

#38 <http://www.math.uci.edu/~mfried/paplist-cov.html>.

70. **What Gauss told Riemann about Abel’s Theorem**, on the Abel Website at the Danish National Academy of Sciences: presented in the Florida Mathematics History Seminar, Spring 2002, as part of John Thompson’s 70th birthday celebration.

#40 <http://www.math.uci.edu/~mfried/paplist-cov.html>.

71. **The place of exceptional covers among all diophantine relations**, J. Finite Fields **11** (2005) 367–433:

#17 <http://www.math.uci.edu/~mfried/paplist-ff.html>.

72. **The Main Conjecture of Modular Towers and its higher rank generalization**, in *Groupes de Galois arithmétiques et différentiels* (Luminy 2004; eds. D. Bertrand and P. Dèbes), Sem. et Congrès, Vol. **13** (2006), 165–233:

#9 <http://www.math.uci.edu/~mfried/paplist-ff.html>.

73. **Regular realizations of  $p$ -projective quotients and modular curve-like towers**, Oberwolfach report #25, on the conference on pro- $p$  groups, April (2006), 64–67:

#10 <http://www.math.uci.edu/~mfried/paplist-ff.html>.

74. with Ram Valluri (West. Ont. U.), **Chebychev Derived Spindown Parameters for Gravitational Wave Signals from Pulsars**, Can. J. Phys. Vol. **86** 2008. 597–600. 2008.

75. **Alternating groups and moduli space lifting invariants**, Israel J. Math. (2010) **179**, 57–125 (DOI 10.1007/s11856-010-0073-2). Arxiv #0611591v4

#39 <http://www.math.uci.edu/~mfried/paplist-cov.html>.

76. **Algebraic Equations and Finite Simple Groups: What I learned from graduate school at the University of Michigan**, 1964–1967, Continuum 2008, UMich. Alumni Publication, 17–18.

#19 <http://www.math.uci.edu/~mfried/paplist-ff.html>.

77. **Variables Separated Equations and Finite Simple Groups: Strikingly different roles for the Branch Cycle Lemma and the Finite Simple Group Classification**, January 2012 **55** No. 1: 1–72, doi: 10.1007/s11425-011-4324-4. Item #20 in <http://www.math.uci.edu/~mfried/paplist-ff.html>.

78. with I. Gusić, **Schinzel's Problem: Imprimitve covers and the monodromy method**, **201** (2012), 1–14, *Acta Arithmetica*, ArXiv #1104.1740v3.  
 #41 <http://www.math.uci.edu/~mfried/paplist-cov.html>.
79. **Schur's Conjecture and Exceptional Covers**, §9.7, **Handbook of Finite Fields**, (2013), 290–302, editors G. Mullen and D. Panario item #21 in **mysite/paplist-ff.html**.
80. **Introduction to moduli,  $\ell$ -adic representations and the Regular Version of the Inverse Galois Problem**, In "Teichmüller theory and its impact", in the Nankai Series in Pure, Applied Mathematics and Theoretical Physics, the World Scientific Company, 1–53 (2018).

The following papers are on-line: #81, #82 and #83 go together: #83 is a book, 2/3rds complete, fully outlined, with backdrop two books of Serre's: "Topics in Galois Theory," for which I was a reviewer, and "Abelian  $\ell$ -adic representations." I am completing this book while in Boulder area, expecting to lecture on it at U. of Colorado in a seminar.

On it I did presentations an Oberwolfach, Germany Conference in April, 2018, of which I am a co-organizer with Pierre Dèbes of Lille and Benjamin Collas at #81 and #82 give full proof details of the major conclusion to the book. Yet, without the book, including its historical context, they were getting unwieldy. #84 is an enhancement of recent results of Fedor Pakovich, who had an irreducibility constraint that was basically untestable. His result was based on papers of mine at the beginning of my career. It is complete, but needs polishing before I put it on the ArXiv. A prelude to #84 started as a short section in #77.

81. **Connectedness of families of sphere covers of An-Type**, Latest version: 08/14/14, #12 <http://www.math.uci.edu/~mfried/paplist-ff.html>.
82. with Mark van Hoeij, Latest version: 08/14/17. **The small Heisenberg group and  $\ell$ -adic representations from Hurwitz spaces**, #15 <http://www.math.uci.edu/~mfried/paplist-ff.html>.
83. **Monodromy,  $\ell$ -adic representations and the Inverse Galois Problem**, Latest version: 08/01/18, #14 <http://www.math.uci.edu/~mfried/paplist-ff.html>.
84. with I. Gusić, **Genus 0 (or 1) components of variables separated equations**, #42 <http://www.math.uci.edu/~mfried/paplist-cov.html>.

## 2. RESEARCH MONOGRAPHS, MAJOR REVIEWS, ETC.

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### 2.1. Monographs.

1. with Moshe Jarden, **Field Arithmetic**, *Springer Ergebnisse II Vol 11* (1986), 455 pgs, 2nd edition (2004) 754 pgs.
2. **review—Topics in Galois Theory, J.-P. Serre**, 1992, Bartlett and Jones Publishers, *BAMS* **30** #1 (1994), 124–135. ISBN 0-86720-210-6.  
 #31 <http://www.math.uci.edu/~mfried/paplist-cov.html>.

3. Coordinating editor of **Recent Developments in the Inverse Galois Problem**, *AMS Cont. Math.* **186**, *proceedings of AMS-NSF Summer Conference, 1993 Seattle* (1995).
4. Editor of **Curves over finite fields**, *AMS Cont. Math.* **245**, *proceedings of AMS-NSF Summer Conference, 1997 Seattle* (1999).
5. M. Fried, **review** — **Inverse Galois Theory**, Springer Monographs in Math., Gunter Malle and B. Heinrich Matzat, 436 pages, 3-540-62890-8, Springer, Berlin, 1999: *BLMS* **34** (2002), 109–112.
6. Editor of **Arithmetic fundamental groups and noncommutative algebra**, *Proceedings of Symposia in Pure Math.*, **70** (2002), 1999 von Neumann Conference on Arithmetic Fundamental Groups and Noncommutative Algebra, August 16–27, 1999 MSRI, 2002
7. with Moshe Jarden, **Field Arithmetic**, *Springer Ergebnisse der Math.* III, **11**, Springer, Heidelberg, 1986; 2nd ed. 2004, 780 pps. ISBN 3-540-22811-x: [mysite/paplist-ff](#).
8. **Should Journals compensate Referees?**, May 2007 Notices of the AMS, Vol. **54** (2007), No.6, p. 585: [mysite/proplist-ams](#).
9. **The Uneasy Relation Between Referees and Editors, Response to a letter of Professor Aczel**, October 2007 Notices of the AMS, Vol. **54** (2007), No. 10. [mysite/proplist-ams](#).

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## 2.2. Preprints.

1. **Brauer groups and Jacobians**, 20 page preprint.
2. **L-series on a Galois stratification**, under revision for *Journal of Number Theory*, 27 page preprint.
3. **Rigidity and applications of the classification of simple groups to monodromy, Part II**: Applications of connectivity, Davenport and Hilbert-Siegel Problem, 55 pgs.
4. with R. Guralnick, **Radicals don't uniformize the generic curve of genus  $g > 6$** , 50 pgs.
5.  **$A_5$  Modular Towers**, 30 page preprint.
6. with J. Del Castillo,  **$Ax$ 's Conjecture for  $C_{1,d}$  fields**, 24 pages, preprint.
7. Rational cusps on noncongruence towers of the  $j$ -line, 23 page preprint.
8. Explicit deductions on monodromy actions using Dehn twists, 15 page preprint.
8. Rational cusps on noncongruence towers of the  $j$ -line, 26 page preprint.
9. with Darren Semmen, **Modular curve-like Towers and the Inverse Galois Problem**, being rewritten in lieu of revisions in [70] (2006), 1–42, at [www.math.uci.edu/~mfried/#mt](http://www.math.uci.edu/~mfried/#mt).

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## 2.3. Teaching related manuscripts.

1. **Retention rates as an incentive for mathematics and physical science curriculum communication**, 25 pages, Spring 1992.
2. **An Interview Project to Locate Factors that Encourage Minority 8th and 9th Graders in the Santa Ana School District to Participate in Math-Science Tracks**, 6 pages.
3. **UCI Summer Mathematics Institute, Mentor Teacher project**. 1st year report, 1984–85, 110 pages.
4. **The Many Lines in the Curriculum**, report to the Hebrew University Math-Science Education Faculty, 8 pages, Oct. 16, 1991.

5. Chaps. 1–4 of the Sloan funded book **Retention of students using electronic portfolios**, Sept. 25, 1997.

6. **Faculty-Student Interaction Using Interactive Technology**, The center for Educational Partnerships, UCI Outreach Forum, Spring 1997, 23–24. 7. **Interactive E-Mail Assessment**, MAA Vol. on Assessment, B. Gold, S.Z. Keith, and W.A. Marion, eds., Assessment in Undergraduate Math., MAA Notes #49, Wash. DC, 1999, 80–84.

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