

# Number Theory

## Algebraic Number Theory

*11Rxx and 11Sxx*

- [1] Laurent Bartholdi and Michael R. Bush. Maximal unramified 3-extensions of imaginary quadratic fields and  $\mathrm{SL}_2(\mathbb{Z}_3)$ . *J. Number Theory*, 124(1):159–166, 2007.
- [2] Ingrid Bauer, Fabrizio Catanese, and Fritz Grunewald. The absolute Galois group acts faithfully on the connected components of the moduli space of surfaces of general type. [arXiv:0706.1466v1](#) [[math.AG](#)], 13 pages, 2007.
- [3] M. Bauer, M. J. Jacobson, Jr., Y. Lee, and R. Scheidler. Construction of hyperelliptic function fields of high three-rank. *Math. Comp.*, 77(261):503–530 (electronic), 2008.
- [4] Amnon Besser and Rob De Jeu.  $\mathrm{li}(p)$ -service? an algorithm for computing  $p$ -adic polyalgorithms. *Math. Comp.*, 77(262):1105–1134, 2008.
- [5] Wieb Bosma. Computation of cyclotomic polynomials with Magma. In *Computational Algebra and Number Theory (Sydney, 1992)*, volume 325 of *Math. Appl.*, pages 213–225. Kluwer Acad. Publ., Dordrecht, 1995.
- [6] Wieb Bosma and Bart de Smit. On arithmetically equivalent number fields of small degree. In *Algorithmic Number Theory (Sydney, 2002)*, volume 2369 of *Lecture Notes in Comput. Sci.*, pages 67–79. Springer, Berlin, 2002.
- [7] Wieb Bosma and Peter Stevenhagen. On the computation of quadratic 2-class groups. *J. Théor. Nombres Bordeaux*, 8(2):283–313, 1996.
- [8] Nigel Boston. Galois  $p$ -groups unramified at  $p$ —a survey. In *Primes and knots*, volume 416 of *Contemp. Math.*, pages 31–40. Amer. Math. Soc., Providence, RI, 2006.
- [9] Nigel Boston. Galois groups of tamely ramified  $p$ -extensions. *J. Théor. Nombres Bordeaux*, 19(1):59–70, 2007.

- [10] Nigel Boston and Rafe Jones. Arboreal Galois representations. *Geom. Dedicata*, 124:27–35, 2007.
- [11] Nigel Boston and Charles Leedham-Green. Counterexamples to a conjecture of Lemmermeyer. *Arch. Math. (Basel)*, 72(3):177–179, 1999.
- [12] M. R. Bush. Computation of Galois groups associated to the 2-class towers of some quadratic fields. *J. Number Theory*, 100(2):313–325, 2003.
- [13] H. Cohen, F. Diaz y Diaz, and M. Olivier. Subexponential algorithms for class group and unit computations. *J. Symbolic Comput.*, 24(3-4):433–441, 1997.
- [14] Henri Cohen. A survey of computational class field theory. *J. Théor. Nombres Bordeaux*, 11(1):1–13, 1999.
- [15] B. de Smit and H. W. Lenstra, Jr. Linearly equivalent actions of solvable groups. *J. Algebra*, 228(1):270–285, 2000.
- [16] Bart de Smit. On arithmetically equivalent fields with distinct  $p$ -class numbers. *J. Algebra*, 272(2):417–424, 2004.
- [17] Darrin Doud. Supersingular Galois representations and a generalization of a conjecture of Serre. *Experiment. Math.*, 16, 119–128 pages, 2007.
- [18] Kirsten Eisenträger and Kristin Lauter. Computing Igusa class polynomials via the chinese remainder theory. [arXiv:math.NT/04053505 v1](https://arxiv.org/abs/math/04053505), 2004.
- [19] Jordan S. Ellenberg and Akshay Venkatesh. The number of extensions of a number field with fixed degree and bounded discriminant. *Ann. of Math. (2)*, 163(2):723–741, 2006.
- [20] Claus Fieker. Applications of the class field theory of global fields. In *Discovering Mathematics with Magma*, volume 19 of *Algorithms Comput. Math.*, pages 31–62. Springer, Berlin, 2006.
- [21] Claus Fieker. Sparse representation for cyclotomic fields. *Experiment. Math.*, 16(4):493–500, 2007.

- [22] Claus Fieker. Minimizing representations over number fields ii: Computations in the Brauer group. *J. Algebra*, 322(3):752–765, 2009.
- [23] Claus Fieker and Michael E. Pohst. Dependency of units in number fields. *Math. Comp.*, 75(255):1507–1518 (electronic), 2006.
- [24] Claus Fieker and Michael E. Pohst. A lower regulator bound for number fields. *J. Number Theory*, 128(10):2767–2775, 2008.
- [25] Felix Fontein. The infrastructure of a global field of arbitrary unit rank. [arXiv:0809.1685](https://arxiv.org/abs/0809.1685), 36 pages, 2008.
- [26] David Ford, Sebastian Pauli, and Xavier-François Roblot. A fast algorithm for polynomial factorization over  $Q_p$ . *J. Théor. Nombres Bordeaux*, 14(1):151–169, 2002.
- [27] Robert Fraatz. On the computation of integral closures of cyclic extensions of function fields. *LMS J. Comput. Math.*, 10:141–160 (electronic), 2007.
- [28] S. P. Glasby. Generators for the group of units of  $Z_n$ . *Austral. Math. Soc. Gaz.*, 22(5):226–228, 1995.
- [29] Norbert Goeb. Computing the automorphism groups of hyperelliptic function fields. [arXiv:math.NT/0305284](https://arxiv.org/abs/math/0305284), 16 pages, 2003.
- [30] Sherry Gong. On a problem regarding coefficients of cyclotomic polynomials. *J. Number Theory*, In Press, 2009.
- [31] Jordi Guardia, Jesus Montes, and Enric Nart. Higher Newton polygons in the computation of discriminants and prime ideal decomposition in number fields. [arXiv:0807.4065v3](https://arxiv.org/abs/0807.4065v3) [[math.NT](https://arxiv.org/abs/math.NT)], 24 pages, 2008.
- [32] Emmanuel Hallouin and Christian Maire. Cancellation in totally definite quaternion algebras. *J. Reine Angew. Math.*, 595:189–213, 2006.
- [33] Emmanuel Hallouin and Marc Perret. On the kernel of the norm in some unramified number fields extensions. [arXiv:0706.0417](https://arxiv.org/abs/0706.0417), 6 pages, 2007.
- [34] Stephan Hell. *Die Nenner des Kontsevich-Integrals und ein spezieller Drinfeld-Assoziator*. PhD thesis, Freie Universität Berlin, July 2002.

- [35] F. Hess. An algorithm for computing isomorphisms of algebraic function fields. In *Algorithmic Number Theory*, volume 3076 of *Lecture Notes in Comput. Sci.*, pages 263–271. Springer, Berlin, 2004.
- [36] Florian Hess, Sebastian Pauli, and Michael E. Pohst. Computing the multiplicative group of residue class rings. *Math. Comp.*, 72(243):1531–1548 (electronic), 2003.
- [37] David Hubbard. Dihedral side extensions and class groups. *J. Number Theory*, 128(4):731–737, 2008.
- [38] Jean-François Jaulent, Sebastian Pauli, Michael E. Pohst, and Florence Soriano-Gafiuk. Computation of 2-groups of narrow logarithmic divisor classes of number fields. *Journal of Symbolic Computation*, To appear, 2008.
- [39] Jean-François Jaulent, Sebastian Pauli, Michael E. Pohst, and Florence Soriano-Gafiuk. Computation of 2-groups of positive classes of exceptional number fields. *J. Théor. Nombres Bordeaux*, 20(3):715–732, 2008.
- [40] Henri Johnston. On the trace map between absolutely abelian number fields of equal conductor. *Acta Arith.*, 122(1):63–74, 2006.
- [41] John W. Jones and David P. Roberts. A database of local fields. *J. Symbolic Comput.*, 41(1):80–97, 2006.
- [42] John Jossey. Galois 2-extensions unramified outside 2. *J. Number Theory*, 124(1):42–56, 2007.
- [43] Masanari Kida. Kummer theory for norm algebraic tori. *J. Algebra*, 293(2):427–447, 2005.
- [44] Masanari Kida, Yuichi Rikuna, and Atsushi Sato. Classifying Brumer’s quintic polynomials by weak Mordell-Weil groups. [arXiv:math.NT/0802.0054v1](https://arxiv.org/abs/math.NT/0802.0054v1), 10 pages, 2008.
- [45] Jürgen Klüners and Gunter Malle. Counting nilpotent Galois extensions. *J. Reine Angew. Math.*, 572:1–26, 2004.
- [46] Jürgen Klüners and Sebastian Pauli. Computing residue class rings and Picard groups of orders. *J. Algebra*, 292(1):47–64, 2005.

- [47] M. Künzer and H. Weber. Some additive Galois cohomology rings. *Comm. Algebra*, 33(12):4415–4455, 2005.
- [48] Matthias Künzer and Eduard Wirsing. On coefficient valuations of Eisenstein polynomials. *J. Théor. Nombres Bordeaux*, 17(3):801–823, 2005.
- [49] Thorsten Lagemann. *Codes und Automorphismen optimaler Artin-Schreier-Turme*. PhD thesis, Ruprecht-Karls-Universität Heidelberg, April 2006.
- [50] Y. Lee, R. Scheidler, and C. Yarrish. Computation of the fundamental units and the regulator of a cyclic cubic function field. *Experiment. Math.*, 12(2):211–225, 2003.
- [51] Franck Leprévost, Michael Pohst, and Andreas Schöpp. Units in some parametric families of quartic fields. *Acta Arith.*, 127(3):205–216, 2007.
- [52] Aaron Levin. Ideal class groups and torsion in Picard groups of varieties. arXiv:0805.1361v1 [math.NT], 31 pages, 2008.
- [53] Melissa L. Macasieb. Derived arithmetic Fuchsian groups of genus two. *Experiment. Math.*, 17(3):347–369, 2008.
- [54] Kazuo Matsuno. Construction of elliptic curves with large Iwasawa  $\lambda$ -invariants and large Tate-Shafarevich groups. *Manuscripta Math.*, 122(3):289–304, 2007.
- [55] William G. McCallum and Romyar T. Sharifi. A cup product in the Galois cohomology of number fields. *Duke Math. J.*, 120(2):269–310, 2003.
- [56] Harris Nover. Computation of Galois groups associated to the 2-class towers of some imaginary quadratic fields with 2-class group  $c_2 \times c_2 \times c_2$ . *Journal of Number Theory*, 129(1):231 – 245, 2009.
- [57] Sebastian Pauli. *Efficient Enumeration of Extensions of Local Fields with Bounded Discriminant*. PhD thesis, Concordia University, June 2001.
- [58] Sebastian Pauli. Constructing class fields over local fields. *J. Théor. Nombres Bordeaux*, 18(3):627–652, 2006.

- [59] Sebastian Pauli and Florence Soriano-Gafiuk. The discrete logarithm in logarithmic  $l$ -class groups and its applications in  $K$ -theory. In *Algorithmic Number Theory*, volume 3076 of *Lecture Notes in Comput. Sci.*, pages 367–378. Springer, Berlin, 2004.
- [60] René Schoof. Arakelov class groups and ideal lattices. *Mathematisches Forschungsinstitut Oberwolfach Report No. 1/2005*, pages 23–24, 2005.
- [61] René Schoof. Computing Arakelov class groups. In *Algorithmic number theory: lattices, number fields, curves and cryptography*, volume 44 of *Math. Sci. Res. Inst. Publ.*, pages 447–495. Cambridge Univ. Press, Cambridge, 2008.
- [62] Andreas M. Schöpp. Fundamental units in a parametric family of not totally real quintic number fields. *J. Théor. Nombres Bordeaux*, 18(3):693–706, 2006.
- [63] Romyar T. Sharifi. Iwasawa theory and the Eisenstein ideal. *Duke Math. J.*, 137(1):63–101, 2007.
- [64] Romyar T. Sharifi. On Galois groups of unramified pro- $p$  extensions. *Math. Ann.*, 342(2):297–308, 2008.
- [65] William Stein and Yan Zhang. On power bases in number fields. *Preprint*, 15 pages, 2005.
- [66] Aliza Steurer. On the Galois groups of the 2-class towers of some imaginary quadratic fields. *J. Number Theory*, 125(1):235–246, 2007.
- [67] Mark van Hoeij and John Cremona. Solving conics over function fields. *J. Théor. Nombres Bordeaux*, 18(3):595–606, 2006.
- [68] John Voight. The gauss higher relative class number problem. *Ann. Sci. Math. Québec*, Accepted, 10 pages, 2009.
- [69] Gabor Wiese. On projective linear groups over finite fields as Galois groups over the rational numbers. In *Edixhoven, Bas et al., Modular forms on Schiermonnikoog. Based on the conference on modular forms, Schiermonnikoog, Netherlands, October 2006*, pages 343–350. Cambridge University Press, Cambridge, 2008.

- [70] Qingquan Wu and Renate Scheidler. An explicit treatment of bi-quadratic function fields. *Contrib. Discrete Math.*, 2(1):43–60 (electronic), 2007.