Public Key Cryptography

See also Curve-Based Public Key Cryptography

- Daniel J. Bernstein, *Batch binary edwards*, Advances in Cryptology CRYPTO 2009, Lecture Notes in Comput. Sci., vol. 5677, Springer, Berlin, 2009, pp. 317–336.
- [2] Luk Bettale, Jean-Charles Faugère, and Ludovic Perret, Cryptanalysis of the TRMS signature scheme of PKC'05, Progress in Cryptology, AfricaCrypt 2008, Lecture Notes in Computer Science, vol. 5023, Springer Berlin/Heidelberg, 2008, pp. 143–155.
- [3] Olivier Billet and Gilles Macario-Rat, Cryptanalysis of the square cryptosystems, Advances in Cryptology – ASIACRYPT 2009, Lecture Notes in Comput. Sci., vol. 5912, Springer, Berlin, 2009, pp. 451–468.
- [4] Simon R. Blackburn, Carlos Cid, and Steven D. Galbraith, *Cryptanalysis of a cryp*tosystem based on Drinfeld modules, 2003.
- [5] Jens-Matthias Bohli, Stefan Röhrich, and Rainer Steinwandt, Key substitution attacks revisited: Taking into account malicious signers, 2006, pp. 30–36.
- [6] Jens-Matthias Bohli, Rainer Steinwandt, María Isabel González Vasco, and Consuelo Martínez, Weak keys in MST₁, Des. Codes Cryptogr. **37** (2005), no. 3, 509–524. MR MR2177649
- Wieb Bosma, James Hutton, and Eric R. Verheul, *Looking beyond XTR*, Advances in Cryptology—Asiacrypt 2002, Lecture Notes in Comput. Sci., vol. 2501, Springer, Berlin, 2002, pp. 46–63. MR MR2087376 (2006c:94016)
- [8] Charles Bouillaguet, Pierre-Alain Fouque1, Antoine Joux, and Joana Treger, A family of weak keys in HFE (and the corresponding practical key-recovery), pp. 1–16.
- [9] An Braeken, Christopher Wolf, and Bart Preneel, A study of the security of unbalanced oil and vinegar signature schemes, Topics in Cryptology—CT-RSA 2005, Lecture Notes in Comput. Sci., vol. 3376, Springer, Berlin, 2005, pp. 29–43. MR MR2174368
- [10] Chia-Hsin Owen Chen, Ming-Shing Chen, Jintai Ding, Fabian Werner, and Bo-Yin Yang, Odd-char multivariate hidden field equations, 2008.

- [11] Jiun-Ming Chen and Bo-Yin Yang, Building secure tame-like multivariate public-key cryptosystems: The new TTS, Information Security and Privacy: 10th Australasian Conference, ACISP 2005, Brisbane, Australia, July 4-6, 2005. Proceedings, Lecture Notes in Comput. Sci., vol. 3574, Springer, Berlin, 2005, p. 518.
- [12] Robert S. Coulter, George Havas, and Marie Henderson, Giesbrecht's algorithm, the HFE cryptosystem and Ore's p^s-polynomials, Computer Mathematics (Matsuyama, 2001), Lecture Notes Ser. Comput, vol. 9, World Sci. Publ., River Edge, NJ, 2001, pp. 36–45. MR MR1877440 (2002m:11103)
- [13] J. Ding, J. E. Gower, D. Schmidt, C. Wolf, and Z. Yin, Complexity estimates for the F₄ attack on the perturbed Matsumoto-Imai cryptosystem, Cryptography and coding, Lecture Notes in Comput. Sci., vol. 3796, Springer, Berlin, 2005, pp. 262–277. MR MR2235262 (2007f:94036)
- [14] Jintai Ding, Jason E. Gower, and Dieter Schmidt, Multivariate public key cryptosystems, Springer, Berlin, 2006.
- [15] Jintai Ding and Dieter Schmidt, Cryptanalysis of HFEv and internal perturbation of HFE, Public Key Cryptography—PKC 2005, Lecture Notes in Comput. Sci., vol. 3386, Springer, Berlin, 2005, pp. 288–301. MR MR2174048 (2006j:94061)
- [16] Jintai Ding, Dieter Schmidt, and Fabian Werner, Algebraic attack on HFE revisited, Information Security, Lecture Notes in Comput. Sci., vol. 5222, Springer, Berlin, 2008, pp. 215–227.
- [17] Jintai Ding and John Wagner, Cryptanalysis of rational multivariate public key cryptosystems, 2007.
- [18] Bettina Eick and Delaram Kahrobaei, *Polycyclic groups: A new platform for cryptol*ogy?, 2004.
- [19] L. Hernandez Encinas, J. Munoz Masque, and A. Queiruga Dios, Analysis of the efficiency of the Chor–Rivest cryptosystem implementation in a safe-parameter range, Information Sciences To appear (2009).
- [20] Jean-Charles Faugère and Antoine Joux, Algebraic cryptanalysis of hidden field equation (HFE) cryptosystems using Gröbner bases, Advances in Cryptology—CRYPTO 2003, Lecture Notes in Comput. Sci., vol. 2729, Springer, Berlin, 2003, pp. 44–60. MR MR2093185 (2005e:94140)

- [21] Patrick Felke, Computing the uniformity of power mappings: A systematic approach with the multi-variate method over finite fields of odd characteristic, PhD Thesis, Ruhr Universität Bochum, 2005.
- [22] Michelle Feltz, On the conjugacy problem in groups and its variants, Master thesis in mathematics, University of Fribourg, 2010.
- [23] Pierre-Alain Fouque, Gilles Macario-Rat, Ludovic Perret, and Jacques Stern, Total break of the l-IC signature scheme, Public Key Cryptography, PKC 2008, Lecture Notes in Computer Science, vol. 4939, Springer, 2008, pp. 1–17.
- [24] Pierre-Alain Fouque, Gilles Macario-Rat, and Jacques Stern, Key recovery on hidden monomial multivariate schemes, Advances in Cryptology, EUROCRYPT 2008, Lecture Notes in Computer Science, vol. 4965, Springer Berlin/Heidelberg, 2008, pp. 19– 30.
- [25] Pierrick Gaudry and Eric Schost, A low-memory parallel version of Matsuo, Chao, and Tsujii's algorithm, Algorithmic Number Theory, Lecture Notes in Comput. Sci., vol. 3076, Springer, Berlin, 2004, pp. 208–222. MR MR2137355 (2005m:11237)
- [26] Volker Gebhardt, A new approach to the conjugacy problem in Garside groups, J. Algebra 292 (2005), no. 1, 282–302. MR MR2166805
- [27] Willi Geiselmann, Willi Meier, and Rainer Steinwandt, An attack on the isomorphisms of polynomials problem with one secret, Int. J. Inf. Secur. (2003), no. 2, 59–64.
- [28] Willi Geiselmann and Rainer Steinwandt, Cryptanalysis of a knapsack-like cryptosystem, Period. Math. Hungar. 45 (2002), no. 1-2, 35–41. MR MR1955191 (2003m:94062)
- [29] _____, Yet another sieving device, Topics in Cryptology—CT-RSA 2004, Lecture Notes in Comput. Sci., vol. 2964, Springer, Berlin, 2004, pp. 278–291. MR MR2092251
- [30] _____, Non-wafer-scale sieving hardware for the NFS: another attempt to cope with 1024-bit, Advances in cryptology—EUROCRYPT 2007, Lecture Notes in Comput. Sci., vol. 4515, Springer, Berlin, 2007, pp. 466–481. MR MR2449226 (2009h:94125)
- [31] María Isabel González Vasco, Martin Rötteler, and Rainer Steinwandt, On minimal length factorizations of finite groups, Experiment. Math. 12 (2003), no. 1, 1–12. MR MR2002670 (2004h:20035)

- [32] María Isabel González Vasco and Rainer Steinwandt, Clouds over a public key cryptosystem based on Lyndon words, Inform. Process. Lett. 80 (2001), no. 5, 239–242.
 MR MR1864974 (2003h:94037)
- [33] _____, Obstacles in two public key cryptosystems based on group factorizations, Tatra Mt. Math. Publ. 25 (2002), 23–37, TATRACRYPT '01 (Liptovský Ján). MR MR1976471 (2004f:94061)
- [34] Markus Grassl, Ivana Ilić, Spyros Magliveras, and Rainer Steinwandt, *Cryptanalysis* of the Tillich–Zémor hash function, J. Cryptology **online first** (2010), 1–9.
- [35] Markus Grassl and Rainer Steinwandt, Cryptanalysis of an authentication scheme using truncated polynomials, Inform. Process. Lett. Article in Press (2009).
- [36] Anja Groch, Dennis Hofheinz, and Rainer Steinwandt, A practical attack on the root problem in braid groups, Algebraic methods in cryptography, Contemp. Math., vol. 418, Amer. Math. Soc., Providence, RI, 2006, pp. 121–131. MR MR2389293
- [37] Guillaume Hanrot and Damien Stehlé, Improved analysis of Kannan's shortest lattice vector algorithm (extended abstract), Advances in cryptology—CRYPTO 2007, Lecture Notes in Comput. Sci., vol. 4622, Springer, Berlin, 2007, pp. 170–186. MR MR2419600
- [38] Xin Jiang, Jintai Ding, and Lei Hu, Kipnis-Shamir attack on HFE revisited, Information Security and Cryptology, Lecture Notes in Computer Science, vol. 4990, Springer Berlin/Heidelberg, 2008, pp. 399–411.
- [39] Ellen Jochemsz and Alexander May, A polynomial time attack on RSA with private CRT-exponents smaller than N^{0.073}, Advances in cryptology—CRYPTO 2007, Lecture Notes in Comput. Sci., vol. 4622, Springer, Berlin, 2007, pp. 395–411. MR MR2423861
- [40] Antoine Joux, Sébastien Kunz-Jacques, Frédéric Muller, and Pierre-Michel Ricordel, *Cryptanalysis of the tractable rational map cryptosystem*, Public Key Cryptography— PKC 2005, Lecture Notes in Comput. Sci., vol. 3386, Springer, Berlin, 2005, pp. 258– 274. MR MR2174046
- [41] Arkadius Kalka, Mina Teicher, and Boaz Tsaban, Cryptanalysis of the algebraic eraser and short expressions of permutations as products, 2008.
- [42] Wolfgang Lempken and Tran van Trung, On minimal logarithmic signatures of finite groups, Experiment. Math. 14 (2005), no. 3, 257–269. MR MR2172704

- [43] Françoise Levy-dit-Vehel and Ludovic Perret, Polynomial equivalence problems and applications to multivariate cryptosystems, Progress in Cryptology—Indocrypt 2003, Lecture Notes in Comput. Sci., vol. 2904, Springer, Berlin, 2003, pp. 235–251. MR MR2092385 (2005e:94175)
- [44] Françoise Levy-dit Vehel and Ludovic Perret, A Polly Cracker system based on satisfiability, Coding, cryptography and combinatorics, Progr. Comput. Sci. Appl. Logic, vol. 23, Birkhäuser, Basel, 2004, pp. 177–192. MR MR2090648 (2005e:94176)
- [45] Le Van Ly, Polly Two: A new algebraic polynomial-based public-key scheme, Appl.
 Algebra Engrg. Comm. Comput. 17 (2006), no. 3-4, 267–283. MR MR2233786
- [46] Mohamed Saied Emam Mohamed, Jintai Ding, and Johannes Buchmann, Algebraic cryptanalysis of MQQ public key cryptosystem by mutantxl, 2008.
- [47] Naoki Ogura and Shigenori Uchiyama, *Remarks on the attack of Fouque et al. against the lIC scheme*, 2008.
- [48] _____, Cryptanalysis of the birational permutation signature scheme over a noncommutative ring, 2009.
- [49] Ayoub Otmani, Jean-Pierre Tillich, and Leonard Dallot, *Cryptanalysis of two McEliece cryptosystems based on quasi-cyclic codes*, 2008.
- [50] Ayoub Otmani, Jean-Pierre Tillich, and Léonard Dallot, Cryptanalysis of two McEliece cryptosystems based on quasi-cyclic codes, Math. Comput. Sci. 3 (2010), no. 2, 129–140.
- [51] Ludovic Perret, A fast cryptanalysis of the isomorphism of polynomials with one secret problem, Advances in Cryptology - Eurocrypt 2005, Lecture Notes in Computer Science, vol. 3494, Springer Berlin/Heidelberg, 2005, pp. 354–370.
- [52] Albrecht Petzoldt and Johannes Buchmann, A multivariate signature scheme with an almost cyclic public key, 2007.
- [53] Albrecht Petzoldt, Stanislav Bulygin, and Johannes Buchmann, Selecting parameters for the rainbow signature scheme – Extended version, 2010, p. 21.
- [54] Benjamin Smith, Isogenies and the discrete logarithm problem in Jacobians of genus 3 hyperelliptic curves, Advances in Cryptology, Eurocrypt 2008, Lecture Notes in Computer Science, vol. 4965, Springer Berlin/Heidelberg, 2008, pp. 163–180.

- [55] Rainer Steinwandt, Loopholes in two public key cryptosystems using the modular group, Public Key Cryptography (Cheju Island, 2001), Lecture Notes in Comput. Sci., vol. 1992, Springer, Berlin, 2001, pp. 180–189. MR MR1898034
- [56] _____, A ciphertext-only attack on Polly Two, Appl. Algebra Engrg. Comm. Comput.
 21 (2010), no. 2, 85–92. MR 2600705 (2011b:94046)
- [57] Rainer Steinwandt and Regine Endsuleit, A note on timing attacks based on the evaluation of polynomials, 2000.
- [58] Rainer Steinwandt, Willi Geiselmann, and Regine Endsuleit, Attacking a polynomialbased cryptosystem: Polly cracker, Int. J. Inf. Secur. 1 (2002), no. 3, 143–148.
- [59] Shigeo Tsujii, Kohtaro Tadaki, and Ryou Fujita, Proposal for piece in hand matrix: General concept for enhancing security of multivariate public key cryptosystems, IE-ICE Trans A: Fundamentals E90-A (2007), no. 5, 992–999.
- [60] Shigeo Tsujii, Kohtaro Tadaki, and Ryou Fujita, Nonlinear piece-in-hand matrix method for enhancing security of multivariate public key cryptosystems, 2008.
- [61] Shigeo Tsujii, Kohtaro Tadaki, Masahito Gotaishi, Ryo Fujita, and Masao Kasahara, Proposal of PPS multivariate public key cryptosystems, 2009, p. 21 pages.
- [62] Valeérie Gauthier Umaña and Gregor Leander, Practical key recovery attacks on two McEliece variants, 2009, pp. 1–19.
- [63] Eric R. Verheul, Evidence that XTR is more secure than supersingular elliptic curve cryptosystems, J. Cryptology 17 (2004), no. 4, 277–296. MR MR2090558
- [64] Zhiwei Wang, Xuyun Nie, Shihui Zheng, Yixian Yang, and Zhihui Zhang, A new construction of multivariate Public Key Encryption Scheme through internally perturbed plus, Computational Science and Its Applications, ICCSA 2008, Lecture Notes in Computer Science, vol. 5073, Springer, 2008, pp. 1–13.
- [65] Christopher Wolf, An Braeken, and Bart Preneel, Efficient cryptanalysis of RSE(2) PKC and RSSE(2) PKC, Security in Communication Networks: Fourth International Conference, SCN 2004, Amalfi, Italy, September 8-10, 2004, Lecture Notes in Comput. Sci., vol. 3352, Springer, Berlin, 2005, pp. 294–309.
- [66] _____, On the security of stepwise triangular systems, Des. Codes Cryptogr. 40 (2006), no. 3, 285–302. MR MR2251321

- [67] W. Christopher Wolf, Multivariate quadratic polynomials in public key cryptography, 2005.
- [68] Kenneth Koon-Ho Wong, Applications of finite field computation to cryptology: Extension field arithmetic in public key systems and algebraic attacks on stream ciphers, Phd, Queensland University of Technology, 2008.
- [69] Kenneth Koon-Ho Wong, Gregory V. Bard, and Robert H. Lewis, Partitioning multivariate polynomial equations via vertex separators for algebraic cryptanalysis and mathematical applications, 2009.
- [70] Bo-Yin Yang, Chen-Mou Cheng, Bor-Rong Chen, and Chen Jiun-Ming, Implementing minimized multivariate public-key cryptosystems on low-resource embedded systems, 2005.