

The Current Bibliography List

(first posted version)

for Volume 2 of Foundations of Cryptography

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Preface

Following is the current bibliography as referred to by the current preliminary drafts of the chapters on encryption and signature schemes (Chapter 5 and 6) of the second volume of the work *Foundations of Cryptography*.

The bigger picture. The current manuscript is part of a working draft of Part 2 of the three-part work *Foundations of Cryptography* (see Figure 0.1). The three parts of this work are *Basic Tools*, *Basic Applications*, and *Beyond the Basics*. The first part (containing Chapters 1–4) has been published by Cambridge University Press (in June 2001). The second part, consists of Chapters 5–7 (regarding Encryption Schemes, Signatures Schemes, and General Cryptographic Protocols, respectively). We hope to publish the second part with Cambridge University Press within a couple of years.

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| Part 1: Introduction and Basic Tools |
| Chapter 1: Introduction |
| Chapter 2: Computational Difficulty (One-Way Functions) |
| Chapter 3: Pseudorandom Generators |
| Chapter 4: Zero-Knowledge Proofs |
| Part 2: Basic Applications |
| Chapter 5: Encryption Schemes |
| Chapter 6: Signature Schemes |
| Chapter 7: General Cryptographic Protocols |
| Part 3: Beyond the Basics |
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Figure 0.1: Organization of this work

Bibliography

- [1] L.M. Adleman and M. Huang. *Primality Testing and Abelian Varieties Over Finite Fields*. Springer-Verlag Lecture Notes in Computer Science (Vol. 1512), 1992. Preliminary version in *19th ACM Symposium on the Theory of Computing*, 1987.
- [2] W. Aiello and J. Håstad. Perfect Zero-Knowledge Languages can be Recognized in Two Rounds. In *28th IEEE Symposium on Foundations of Computer Science*, pages 439–448, 1987.
- [3] M. Ajtai. Generating Hard Instances of Lattice Problems. In *28th ACM Symposium on the Theory of Computing*, pages 99–108, 1996.
- [4] M. Ajtai, J. Komlos, E. Szemerédi. Deterministic Simulation in LogSpace. In *19th ACM Symposium on the Theory of Computing*, pages 132–140, 1987.
- [5] W. Alexi, B. Chor, O. Goldreich and C.P. Schnorr. RSA/Rabin Functions: Certain Parts are As Hard As the Whole. *SIAM Journal on Computing*, Vol. 17, April 1988, pages 194–209.
- [6] N. Alon and J.H. Spencer. *The Probabilistic Method*, John Wiley & Sons, Inc., 1992.
- [7] J.H. An and M. Bellare. Constructing VIL-MACs from FIL-MACs: Message Authentication under Weakened Assumptions. In *Crypto99*, Springer Lecture Notes in Computer Science (Vol. 1666), pages 252–269.
- [8] T.M. Apostol. *Introduction ot Analytic Number Theory*. Springer, 1976.
- [9] L. Babai. Trading Group Theory for Randomness. In *17th ACM Symposium on the Theory of Computing*, pages 421–420, 1985.
- [10] E. Bach. *Analytic Methods in the Analysis and Design of Number-Theoretic Algorithms*. ACM Distinguished Dissertation (1984), MIT Press, Cambridge MA, 1985.
- [11] E. Bach and J. Shallit. *Algorithmic Number Theory* (Volume I: Efficient Algorithms). MIT Press, 1996.

- [12] B. Barak. How to Go Beyond the Black-Box Simulation Barrier. In *42nd IEEE Symposium on Foundations of Computer Science*, pages 106–115, 2001.
- [13] D. Beaver. Foundations of Secure Interactive Computing. In *Crypto91*, Springer-Verlag Lecture Notes in Computer Science (Vol. 576), pages 377–391.
- [14] D. Beaver. Secure Multi-Party Protocols and Zero-Knowledge Proof Systems Tolerating a Faulty Minority. *J. Cryptology*, Vol. 4, pages 75–122, 1991.
- [15] M. Bellare. A Note on Negligible Functions. Tech. Rep. CS97-529, Dept. of Computer Science and Engineering, UCSD, March 1997.
- [16] M. Bellare, R. Canetti and H. Krawczyk. Pseudorandom functions Revisited: The Cascade Construction and its Concrete Security. In *37th IEEE Symposium on Foundations of Computer Science*, pages 514–523, 1996.
- [17] M. Bellare, R. Canetti and H. Krawczyk. Keying Hash Functions for Message Authentication. In *Crypto96*, Springer Lecture Notes in Computer Science (Vol. 1109), pages 1–15.
- [18] M. Bellare, R. Canetti and H. Krawczyk. Modular Approach to the Design and Analysis of Authentication and Key Exchange Protocols. In *30th ACM Symposium on the Theory of Computing*, pages 419–428, 1998.
- [19] M. Bellare, A. Desai, D. Pointcheval and P. Rogaway. Relations among notions of security for public-key encryption schemes. In *Crypto98*, Springer Lecture Notes in Computer Science (Vol. 1462), pages 26–45.
- [20] M. Bellare and O. Goldreich. On Defining Proofs of Knowledge. In *Crypto92*, Springer-Verlag Lecture Notes in Computer Science (Vol. 740), pages 390–420.
- [21] M. Bellare, O. Goldreich and S. Goldwasser. Incremental Cryptography: the Case of Hashing and Signing. In *Crypto94*, Springer-Verlag Lecture Notes in Computer Science (Vol. 839), pages 216–233, 1994.
- [22] M. Bellare, O. Goldreich and S. Goldwasser. Incremental Cryptography and Application to Virus Protection. In *27th ACM Symposium on the Theory of Computing*, pages 45–56, 1995.
- [23] M. Bellare, O. Goldreich and H. Krawczyk. Stateless Evaluation of Pseudorandom Functions: Security beyond the Birthday Barrier. In *Crypto99*, Springer Lecture Notes in Computer Science (Vol. 1666), pages 270–287.
- [24] M. Bellare, R. Guerin and P. Rogaway. XOR MACs: New Methods for Message Authentication using Finite Pseudorandom Functions. In *Crypto95*, Springer-Verlag Lecture Notes in Computer Science (Vol. 963), pages 15–28.

- [25] M. Bellare, S. Halevi, A. Sahai and S. Vadhan. Trapdoor Functions and Public-Key Cryptosystems. In *Crypto98*, Springer Lecture Notes in Computer Science (Vol. 1462), pages 283–298.
- [26] M. Bellare, R. Impagliazzo and M. Naor. Does Parallel Repetition Lower the Error in Computationally Sound Protocols? In *38th IEEE Symposium on Foundations of Computer Science*, pages 374–383, 1997.
- [27] M. Bellare, J. Kilian and P. Rogaway. The Security of Cipher Block Chaining. In *Crypto94*, Springer-Verlag Lecture Notes in Computer Science (Vol. 839), pages 341–358.
- [28] M. Bellare and S. Micali. How to Sign Given Any Trapdoor Function. *Journal of the ACM*, Vol. 39, pages 214–233, 1992.
- [29] M. Bellare and P. Rogaway. Random Oracles are Practical: a Paradigm for Designing Efficient Protocols. In *1st Conf. on Computer and Communications Security*, ACM, pages 62–73, 1993.
- [30] M. Bellare and P. Rogaway. Entity Authentication and Key Distribution. In *Crypto93*, Springer-Verlag Lecture Notes in Computer Science (Vol. 773), pages 232–249, 1994.
- [31] M. Bellare and P. Rogaway. Provably Secure Session Key Distribution: The Three Party Case. In *27th ACM Symposium on the Theory of Computing*, pages 57–66, 1995.
- [32] M. Bellare and P. Rogaway. The Exact Security of Digital Signatures: How to Sign with RSA and Rabin. In *EuroCrypt96*, Springer Lecture Notes in Computer Science (Vol. 1070).
- [33] M. Bellare and M. Yung. Certifying Permutations: Noninteractive Zero-Knowledge Based on Any Trapdoor Permutation. *Journal of Cryptology*, Vol. 9, pages 149–166, 1996.
- [34] S. Ben-David, B. Chor, O. Goldreich, and M. Luby. On the Theory of Average Case Complexity. *Journal of Computer and System Science*, Vol. 44, No. 2, April 1992, pages 193–219.
- [35] M. Ben-Or, O. Goldreich, S. Goldwasser, J. Håstad, J. Kilian, S. Micali and P. Rogaway. Everything Provable is Probable in Zero-Knowledge. In *Crypto88*, Springer-Verlag Lecture Notes in Computer Science (Vol. 403), pages 37–56, 1990.
- [36] M. Ben-Or, S. Goldwasser, J. Kilian and A. Wigderson. Multi-Prover Interactive Proofs: How to Remove Intractability. In *20th ACM Symposium on the Theory of Computing*, pages 113–131, 1988.
- [37] M. Ben-Or, S. Goldwasser and A. Wigderson. Completeness Theorems for Non-Cryptographic Fault-Tolerant Distributed Computation. In *20th ACM Symposium on the Theory of Computing*, pages 1–10, 1988.

- [38] E.R. Berlekamp. Factoring Polynomials over Large Finite Fields. *Mathematics of Computation*, Vol. 24, pages 713–735, 1970.
- [39] E.R. Berlekamp, R.J. McEliece, and H.C.A. van Tilborg. On the Inherent Intractability of Certain Coding Problems. *IEEE Trans. on Inform. Theory*, 1978.
- [40] J. Black, S. Halevi, H. Krawczyk, T. Krovetz, and P. Rogaway. UMAC: Fast and Secure Message Authentication. In *Crypto99*, Springer Lecture Notes in Computer Science (Vol. 1666), pages 216–233.
- [41] M. Blum. How to Exchange Secret Keys. *ACM Trans. Comput. Sys.*, Vol. 1, pages 175–193, 1983.
- [42] M. Blum. Coin Flipping by Phone. In *the 24th IEEE Computer Conference (CompCon)*, pages 133–137, February 1982. See also *SIGACT News*, Vol. 15, No. 1, 1983.
- [43] L. Blum, M. Blum and M. Shub. A Simple Secure Unpredictable Pseudo-Random Number Generator. *SIAM Journal on Computing*, Vol. 15, 1986, pages 364–383.
- [44] M. Blum, A. De Santis, S. Micali, and G. Persiano. Non-Interactive Zero-Knowledge Proof Systems. *SIAM Journal on Computing*, Vol. 20, No. 6, pages 1084–1118, 1991. (Considered the journal version of [45].)
- [45] M. Blum, P. Feldman and S. Micali. Non-Interactive Zero-Knowledge and its Applications. In *20th ACM Symposium on the Theory of Computing*, pages 103–112, 1988. See [44].
- [46] M. Blum and S. Goldwasser. An Efficient Probabilistic Public-Key Encryption Scheme which hides all partial information. In *Crypto84*, Lecture Notes in Computer Science (Vol. 196) Springer-Verlag, pages 289–302.
- [47] M. Blum and S. Micali. How to Generate Cryptographically Strong Sequences of Pseudo-Random Bits. *SIAM Journal on Computing*, Vol. 13, pages 850–864, 1984. Preliminary version in *23rd IEEE Symposium on Foundations of Computer Science*, 1982.
- [48] R. Boppana, J. Håstad, and S. Zachos. Does Co-NP Have Short Interactive Proofs? *Information Processing Letters*, 25, May 1987, pp. 127-132.
- [49] J.B. Boyar. Inferring Sequences Produced by Pseudo-Random Number Generators. *Journal of the ACM*, Vol. 36, pages 129–141, 1989.
- [50] G. Brassard. A Note on the Complexity of Cryptography. *IEEE Trans. on Inform. Th.*, Vol. 25, pages 232–233, 1979.
- [51] G. Brassard. Quantum Information Processing: The Good, the Bad and the Ugly. In *Crypto97*, Springer Lecture Notes in Computer Science (Vol. 1294), pages 337–341.

- [52] G. Brassard, D. Chaum and C. Crépeau. Minimum Disclosure Proofs of Knowledge. *Journal of Computer and System Science*, Vol. 37, No. 2, pages 156–189, 1988. Preliminary version by Brassard and Crépeau in *27th IEEE Symposium on Foundations of Computer Science*, 1986.
- [53] G. Brassard and C. Crépeau. Zero-Knowledge Simulation of Boolean Circuits. In *Crypto86*, Springer-Verlag Lecture Notes in Computer Science (Vol. 263), pages 223–233, 1987.
- [54] G. Brassard, C. Crépeau and M. Yung. Constant-Round Perfect Zero-Knowledge Computationally Convincing Protocols. *Theoretical Computer Science*, Vol. 84, pages 23–52, 1991.
- [55] E.F. Brickell and A.M. Odlyzko. Cryptanalysis: A Survey of Recent Results. In *Proceedings of the IEEE*, Vol. 76, pages 578–593, 1988.
- [56] C. Cachin and U. Maurer. Unconditional security against memory-bounded adversaries. In *Crypto97*, Springer Lecture Notes in Computer Science (Vol. 1294), pages 292–306.
- [57] R. Canetti. *Studies in Secure Multi-Party Computation and Applications*. Ph.D. Thesis, Department of Computer Science and Applied Mathematics, Weizmann Institute of Science, Rehovot, Israel, June 1995. Available from <http://theory.lcs.mit.edu/~tcryptol/BOOKS/ran-phd.html>.
- [58] R. Canetti. Security and Composition of Multi-party Cryptographic Protocols. *Journal of Cryptology*, 2000.
- [59] R. Canetti, O. Goldreich and S. Halevi. The Random Oracle Methodology, Revisited. In *30th ACM Symposium on the Theory of Computing*, pages 209–218, 1998.
- [60] R. Canetti, O. Goldreich, S. Goldwasser, and S. Micali. Resettable Zero-Knowledge. In *32nd ACM Symposium on the Theory of Computing*, pages 235–244, 2000.
- [61] E.R. Canfield, P. Erdos, and C. Pomerance. On a problem of Oppenheim concerning “factorisatio numerorum”. *J. Number Theory*, Vol. 17, pages 1–28, 1983.
- [62] L. Carter and M. Wegman. Universal Hash Functions. *Journal of Computer and System Science*, Vol. 18, 1979, pages 143–154.
- [63] D. Chaum. Blind Signatures for Untraceable Payments. In *Crypto82*, Plenum Press, pages 199–203, 1983.
- [64] D. Chaum, C. Crépeau and I. Damgård. Multi-party unconditionally Secure Protocols. In *20th ACM Symposium on the Theory of Computing*, pages 11–19, 1988.

- [65] B. Chor, S. Goldwasser, S. Micali and B. Awerbuch. Verifiable Secret Sharing and Achieving Simultaneity in the Presence of Faults. In *26th IEEE Symposium on Foundations of Computer Science*, pages 383–395, 1985.
- [66] R. Cleve. Limits on the Security of Coin Flips when Half the Processors are Faulty. In *18th ACM Symposium on the Theory of Computing*, pages 364–369, 1986.
- [67] J.D. Cohen and M.J. Fischer. A Robust and Verifiable Cryptographically Secure Election Scheme. In *26th IEEE Symposium on Foundations of Computer Science*, pages 372–382, 1985.
- [68] A. Cohen and A. Wigderson. Dispensers, Deterministic Amplification, and Weak Random Sources. *30th IEEE Symposium on Foundations of Computer Science*, 1989, pages 14–19.
- [69] R. Cramer and I. Damgård. New Generation of Secure and Practical RSA-based Signatures. In *Crypto96*, Springer Lecture Notes in Computer Science (Vol. 1109), pages 173–185.
- [70] R. Cramer and V. Shoup. A Practical Public-Key Cryptosystem Provably Secure Against Adaptive Chosen Ciphertext Attacks. In *Crypto98*, Springer-Verlag Lecture Notes in Computer Science (Vol. 1462), pages 13–25.
- [71] C. Crépeau. Efficient Cryptographic Protocols Based on Noisy Channels. In *EuroCrypt97*, Springer, Lecture Notes in Computer Science (Vol. 1233), pages 306–317.
- [72] I. Damgård. Collision Free Hash Functions and Public Key Signature Schemes. In *EuroCrypt87*, Springer-Verlag, Lecture Notes in Computer Science (Vol. 304), pages 203–216.
- [73] I. Damgård. A Design Principle for Hash Functions. In *Crypto89*, Springer-Verlag Lecture Notes in Computer Science (Vol. 435), pages 416–427.
- [74] I. Damgård. Concurrent Zero-Knowledge in Easy in Practice. *Theory of Cryptography Library*, 99-14, June 1999. <http://philby.ucsd.edu/cryptolib>.
- [75] I. Damgård, O. Goldreich, T. Okamoto and A. Wigderson. Honest Verifier vs Dishonest Verifier in Public Coin Zero-Knowledge Proofs. In *Crypto95*, Springer-Verlag Lecture Notes in Computer Science (Vol. 963), pages 325–338, 1995.
- [76] A. De Santis, G. Di Crescenzo, R. Ostrovsky, G. Persiano and A. Sahai. Robust Non-interactive Zero-Knowledge. In *Crypto01*, Springer Lecture Notes in Computer Science (Vol. 2139), pages 566–598.

- [77] Y. Desmedt and Y. Frankel. Threshold Cryptosystems. In *Crypto89*, Springer-Verlag Lecture Notes in Computer Science (Vol. 435), pages 307–315.
- [78] W. Diffie, and M.E. Hellman. New Directions in Cryptography. *IEEE Trans. on Info. Theory*, IT-22 (Nov. 1976), pages 644–654.
- [79] D. Dolev, C. Dwork, and M. Naor. Non-Malleable Cryptography. In *23rd ACM Symposium on the Theory of Computing*, pages 542–552, 1991. Full version available from authors.
- [80] D. Dolev and A.C. Yao. On the Security of Public-Key Protocols. *IEEE Trans. on Inform. Theory*, Vol. 30, No. 2, pages 198–208, 1983.
- [81] C. Dwork, U. Feige, J. Kilian, M. Naor and S. Safra. Low Communication Perfect Zero Knowledge Two Provers Proof Systems. In *Crypto92*, Springer Verlag, Lecture Notes in Computer Science (Vol. 740), pages 215–227.
- [82] C. Dwork, and M. Naor. An Efficient Existentially Unforgeable Signature Scheme and its Application. *Journal of Cryptology*, Vol. 11 (3), pages 187–208, 1998
- [83] C. Dwork, M. Naor, and A. Sahai. Concurrent Zero-Knowledge. In *30th STOC*, pages 409–418, 1998.
- [84] S. Even and O. Goldreich. On the Security of Multi-party Ping-Pong Protocols. In *24th IEEE Symposium on Foundations of Computer Science*, pages 34–39, 1983.
- [85] S. Even, O. Goldreich, and A. Lempel. A Randomized Protocol for Signing Contracts. *CACM*, Vol. 28, No. 6, 1985, pages 637–647.
- [86] S. Even, O. Goldreich and S. Micali. On-line/Off-line Digital signatures. *Journal of Cryptology*, Vol. 9, 1996, pages 35–67.
- [87] S. Even, A.L. Selman, and Y. Yacobi. The Complexity of Promise Problems with Applications to Public-Key Cryptography. *Inform. and Control*, Vol. 61, pages 159–173, 1984.
- [88] S. Even and Y. Yacobi. Cryptography and NP-Completeness. In proceedings of *7th ICALP*, Springer-Verlag Lecture Notes in Computer Science (Vol. 85), pages 195–207, 1980. See [87].
- [89] U. Feige. Error reduction by parallel repetition – the state of the art. Technical report CS95-32, Computer Science Department, Weizmann Institute of Science, Rehovot, ISREAL, 1995.
- [90] U. Feige, A. Fiat and A. Shamir. Zero-Knowledge Proofs of Identity. *Journal of Cryptology*, Vol. 1, 1988, pages 77–94.

- [91] U. Feige, D. Lapidot, and A. Shamir. Multiple Non-Interactive Zero-Knowledge Proofs Under General Assumptions. *SIAM Journal on Computing*, Vol. 29 (1), pages 1–28, 1999.
- [92] U. Feige and A. Shamir. Zero-Knowledge Proofs of Knowledge in Two Rounds. In *Crypto89*, Springer-Verlag Lecture Notes in Computer Science (Vol. 435), pages 526–544.
- [93] U. Feige and A. Shamir. Witness Indistinguishability and Witness Hiding Protocols. In *22nd ACM Symposium on the Theory of Computing*, pages 416–426, 1990.
- [94] W. Feller. *An Introduction to Probability Theory and Its Applications*. John Wiley, New York, 1968.
- [95] A. Fiat and A. Shamir. How to Prove Yourself: Practical Solution to Identification and Signature Problems. In *Crypto86*, Springer-Verlag Lecture Notes in Computer Science (Vol. 263), pages 186–189, 1987.
- [96] M. Fischer, S. Micali, C. Rackoff, and D.K. Wittenberg. An Oblivious Transfer Protocol Equivalent to Factoring. Unpublished manuscript, 1986. Preliminary versions were presented in *EuroCrypt84*, and in the *NSF Workshop on Mathematical Theory of Security*, Endicott House (1985).
- [97] R. Fischlin and C.P. Schnorr. Stronger Security Proofs for RSA and Rabin Bits. In *EuroCrypt97*, Springer Lecture Notes in Computer Science (Vol. 1233), pages 267–279, 1997.
- [98] L. Fortnow, The Complexity of Perfect Zero-Knowledge. In *19th ACM Symposium on the Theory of Computing*, pages 204–209, 1987.
- [99] A.M. Frieze, J. Håstad, R. Kannan, J.C. Lagarias, and A. Shamir. Reconstructing Truncated Integer Variables Satisfying Linear Congruences. *SIAM Journal on Computing*, Vol. 17, pages 262–280, 1988.
- [100] O. Gaber and Z. Galil. Explicit Constructions of Linear Size Superconcentrators. *Journal of Computer and System Science*, Vol. 22, pages 407–420, 1981.
- [101] M.R. Garey and D.S. Johnson. *Computers and Intractability: A Guide to the Theory of NP-Completeness*. W.H. Freeman and Company, New York, 1979.
- [102] P.S. Gemmell. An Introduction to Threshold Cryptography. In *Crypto-Bytes*, RSA Lab., Vol. 2, No. 3, 1997.
- [103] R. Gennaro and L. Trevisan. Lower bounds on the efficiency of generic cryptographic constructions. *ECCC*, TR00-022, May 2000.
- [104] E.N. Gilbert, F.J. MacWilliams, and N.J.A. Sloane. Codes which detect deception. *Bell Syst. Tech. J.*, Vol. 53, pages 405–424, 1974.

- [105] O. Goldreich. Two Remarks Concerning the GMR Signature Scheme. In *Crypto86*, Springer-Verlag Lecture Notes in Computer Science (Vol. 263), pages 104–110, 1987.
- [106] O. Goldreich. Towards a Theory of Software Protection and Simulation by Oblivious RAMs. In *19th ACM Symposium on the Theory of Computing*, pages 182–194, 1987.
- [107] O. Goldreich. *Foundation of Cryptography – Class Notes*. Preprint, Spring 1989. Superseded by the current book in conjunction with [108].
- [108] O. Goldreich. *Lecture Notes on Encryption, Signatures and Cryptographic Protocol*. Extracts from [107]. Available from <http://theory.lcs.mit.edu/~oded/ln89.html> Superseded by the combination of [115], [116], and [114].
- [109] O. Goldreich. A Note on Computational Indistinguishability. *Information Processing Letters*, Vol. 34, pages 277–281, May 1990.
- [110] O. Goldreich. A Uniform Complexity Treatment of Encryption and Zero-Knowledge. *Journal of Cryptology*, Vol. 6, No. 1, pages 21–53, 1993.
- [111] O. Goldreich. *Foundation of Cryptography – Fragments of a Book*. February 1995. Available from <http://theory.lcs.mit.edu/~oded/frag.html> Superseded by the current book in conjunction with [115].
- [112] O. Goldreich. Notes on Levin’s Theory of Average-Case Complexity. *ECCC*, TR97-058, Dec. 1997.
- [113] O. Goldreich. *Modern Cryptography, Probabilistic Proofs and Pseudorandomness*. Algorithms and Combinatorics series (Vol. 17), Springer, 1999.
- [114] O. Goldreich. *Secure Multi-Party Computation*. In preparation, 1998. Working draft available from <http://theory.lcs.mit.edu/~oded/gmw.html>.
- [115] O. Goldreich. *Encryption Schemes – fragments of a chapter*. December 1999. Available from <http://www.wisdom.weizmann.ac.il/~oded/foc-book.html>
- [116] O. Goldreich. *Signature Schemes – fragments of a chapter*. May 2000. Available from <http://www.wisdom.weizmann.ac.il/~oded/foc-book.html>
- [117] O. Goldreich, S. Goldwasser, and S. Halevi. Collision-Free Hashing from Lattice Problems. *ECCC*, TR95-042, 1996.
- [118] O. Goldreich, S. Goldwasser, and S. Micali. How to Construct Random Functions. *Journal of the ACM*, Vol. 33, No. 4, pages 792–807, 1986.

- [119] O. Goldreich, S. Goldwasser, and S. Micali. On the Cryptographic Applications of Random Functions. In *Crypto84*, Springer-Verlag Lecture Notes in Computer Science (Vol. 263), pages 276–288, 1985.
- [120] O. Goldreich, R. Impagliazzo, L.A. Levin, R. Venkatesan, and D. Zuckerman. Security Preserving Amplification of Hardness. In *31st IEEE Symposium on Foundations of Computer Science*, pages 318–326, 1990.
- [121] O. Goldreich and A. Kahan. How to Construct Constant-Round Zero-Knowledge Proof Systems for NP. *Journal of Cryptology*, Vol. 9, No. 2, pages 167–189, 1996. Preliminary versions date to 1988.
- [122] O. Goldreich and H. Krawczyk. On the Composition of Zero-Knowledge Proof Systems. *SIAM Journal on Computing*, Vol. 25, No. 1, February 1996, pages 169–192.
- [123] O. Goldreich and H. Krawczyk. On Sparse Pseudorandom Ensembles. *Random Structures and Algorithms*, Vol. 3, No. 2, (1992), pages 163–174.
- [124] O. Goldreich, H. Krawczyk and M. Luby. On the Existence of Pseudorandom Generators. *SIAM Journal on Computing*, Vol. 22-6, pages 1163–1175, 1993.
- [125] O. Goldreich and E. Kushilevitz. A Perfect Zero-Knowledge Proof for a Decision Problem Equivalent to Discrete Logarithm. *Journal of Cryptology*, Vol. 6 (2), pages 97–116, 1993.
- [126] O. Goldreich and L.A. Levin. Hard-core Predicates for any One-Way Function. In *21st ACM Symposium on the Theory of Computing*, pages 25–32, 1989.
- [127] O. Goldreich and Y. Lindell. Session-Key Generation using Human Passwords. In *Crypto01*, Springer-Verlag Lecture Notes in Computer Science (Vol. 2139), pages 408–432.
- [128] O. Goldreich, Y. Lustig and M. Naor. On Chosen Ciphertext Security of Multiple Encryptions. Manuscript, 2002.
- [129] O. Goldreich and B. Meyer. Computational Indistinguishability – Algorithms vs. Circuits. *Theoretical Computer Science*, Vol. 191, pages 215–218, 1998.
- [130] O. Goldreich, S. Micali and A. Wigderson. Proofs that Yield Nothing but their Validity or All Languages in NP Have Zero-Knowledge Proof Systems. *Journal of the ACM*, Vol. 38, No. 1, pages 691–729, 1991. Preliminary version in *27th IEEE Symposium on Foundations of Computer Science*, 1986.
- [131] O. Goldreich, S. Micali and A. Wigderson. How to Play any Mental Game – A Completeness Theorem for Protocols with Honest Majority. In *19th ACM Symposium on the Theory of Computing*, pages 218–229, 1987.

- [132] O. Goldreich, N. Nisan and A. Wigderson. On Yao's XOR-Lemma. *ECCC*, TR95-050, 1995.
- [133] O. Goldreich and Y. Oren. Definitions and Properties of Zero-Knowledge Proof Systems. *Journal of Cryptology*, Vol. 7, No. 1, pages 1–32, 1994.
- [134] O. Goldreich and E. Petrank. Quantifying Knowledge Complexity. *Computational Complexity*, Vol. 8, pages 50–98, 1999.
- [135] O. Goldreich, R. Rubinfeld and M. Sudan. Learning polynomials with queries: the highly noisy case. To appear in *SIAM Journal on Discrete Mathematics*.
- [136] O. Goldreich, A. Sahai, and S. Vadhan. Honest-Verifier Statistical Zero-Knowledge equals general Statistical Zero-Knowledge. In *30th ACM Symposium on the Theory of Computing*, pages 399–408, 1998.
- [137] O. Goldreich and M. Sudan. Computational Indistinguishability: A Sample Hierarchy. *Journal of Computer and System Science*, Vol. 59, pages 253–269, 1999.
- [138] O. Goldreich and S. Vadhan. Comparing Entropies in Statistical Zero-Knowledge with Applications to the Structure of SZK. In *14th IEEE Conference on Computational Complexity*, pages 54–73, 1999.
- [139] S. Goldwasser and J. Kilian. Primality Testing Using Elliptic Curves. *Journal of the ACM*, Vol. 46, pages 450–472, 1999. Preliminary version in *18th ACM Symposium on the Theory of Computing*, 1986.
- [140] S. Goldwasser and L.A. Levin. Fair Computation of General Functions in Presence of Immoral Majority. In *Crypto90*, Springer-Verlag Lecture Notes in Computer Science (Vol. 537), pages 77–93.
- [141] S. Goldwasser and S. Micali. Probabilistic Encryption. *Journal of Computer and System Science*, Vol. 28, No. 2, pages 270–299, 1984. Preliminary version in *14th ACM Symposium on the Theory of Computing*, 1982.
- [142] S. Goldwasser, S. Micali and C. Rackoff. The Knowledge Complexity of Interactive Proof Systems. *SIAM Journal on Computing*, Vol. 18, pages 186–208, 1989. Preliminary version in *17th ACM Symposium on the Theory of Computing*, 1985.
- [143] S. Goldwasser, S. Micali, and R.L. Rivest. A Digital Signature Scheme Secure Against Adaptive Chosen-Message Attacks. *SIAM Journal on Computing*, April 1988, pages 281–308.
- [144] S. Goldwasser, S. Micali and P. Tong. Why and How to Establish a Private Code in a Public Network. In *23rd IEEE Symposium on Foundations of Computer Science*, 1982, pages 134–144.

- [145] S. Goldwasser, S. Micali and A.C. Yao. Strong Signature Schemes. In *15th ACM Symposium on the Theory of Computing*, pages 431–439, 1983.
- [146] S. Goldwasser and M. Sipser. Private Coins versus Public Coins in Interactive Proof Systems. *Advances in Computing Research: a research annual*, Vol. 5 (Randomness and Computation, S. Micali, ed.), pages 73–90, 1989.
- [147] J. Håstad, R. Impagliazzo, L.A. Levin and M. Luby. A Pseudorandom Generator from any One-way Function. *SIAM Journal on Computing*, Volume 28, Number 4, pages 1364–1396, 1999. Preliminary versions by Impagliazzo et. al. in *21st ACM Symposium on the Theory of Computing* (1989) and Håstad in *22nd ACM Symposium on the Theory of Computing* (1990).
- [148] J. Håstad, A. Schrift and A. Shamir. The Discrete Logarithm Modulo a Composite Hides $O(n)$ Bits. *Journal of Computer and System Science*, Vol. 47, pages 376–404, 1993.
- [149] R. Impagliazzo and M. Luby. One-Way Functions are Essential for Complexity Based Cryptography. In *30th IEEE Symposium on Foundations of Computer Science*, pages 230–235, 1989.
- [150] R. Impagliazzo and M. Naor. Efficient Cryptographic Schemes Provable as Secure as Subset Sum. *Journal of Cryptology*, Vol. 9, 1996, pages 199–216.
- [151] R. Impagliazzo and S. Rudich. Limits on the Provable Consequences of One-Way Permutations. In *21st ACM Symposium on the Theory of Computing*, pages 44–61, 1989.
- [152] R. Impagliazzo and A. Wigderson. P=BPP if E requires exponential circuits: Derandomizing the XOR Lemma. In *29th ACM Symposium on the Theory of Computing*, pages 220–229, 1997.
- [153] R. Impagliazzo and D. Zuckerman. How to Recycle Random Bits. In *30th IEEE Symposium on Foundations of Computer Science*, 1989, pages 248–253.
- [154] R. Impagliazzo and M. Yung. Direct Zero-Knowledge Computations. In *Crypto87*, Springer-Verlag Lecture Notes in Computer Science (Vol. 293), pages 40–51, 1987.
- [155] A. Juels, M. Luby and R. Ostrovsky. Security of Blind Digital Signatures. In *Crypto97*, Springer Lecture Notes in Computer Science (Vol. 1294).
- [156] J. Justesen. A class of constructive asymptotically good algebraic codes. *IEEE Trans. Inform. Theory*, Vol. 18, pages 652–656, 1972.
- [157] N. Kahale. Eigenvalues and Expansion of Regular Graphs. *Journal of the ACM*, Vol. 42 (5), pages 1091–1106, 1995.

- [158] J. Kahn, M. Saks, and C. Smyth. A Dual Version of Reimer's Inequality and a Proof of Rudich's Conjecture. In *15th IEEE Conference on Computational Complexity*, 2000.
- [159] B.S. Kaliski. Elliptic Curves and Cryptography: A Pseudorandom Bit Generator and Other Tools. Ph.D. Thesis, LCS, MIT, 1988.
- [160] J. Katz and M. Yung. Complete Characterization of Security Notions for Probabilistic Private-Key Encryption. In *32nd ACM Symposium on the Theory of Computing*, pages 245–254, 2000.
- [161] J. Kilian. A Note on Efficient Zero-Knowledge Proofs and Arguments. In *24th ACM Symposium on the Theory of Computing*, pages 723–732, 1992.
- [162] J. Kilian and E. Petrank. An Efficient Non-Interactive Zero-Knowledge Proof System for NP with General Assumptions. *Journal of Cryptology*, Vol. 11, pages 1–27, 1998.
- [163] H. Krawczyk. LFSR-based Hashing and Authentication. In *Crypto94*, Lecture Notes in Computer Science (Vol. 839), Springer-Verlag, pages 129–139.
- [164] H. Krawczyk. New Hash Functions For Message Authentication. In *EuroCrypt95*, Springer-Verlag, Lecture Notes in Computer Science (Vol. 921), pages 301–310.
- [165] J.C. Lagarias and A.M. Odlyzko. Solving Low-Density Subset Sum Problems. *Journal of the ACM*, Vol. 32, pages 229–246, 1985.
- [166] D. Lapidot and A. Shamir. Fully parallelized multi-prover protocols for NEXP-time. *Journal of Computer and System Science*, Vol. 54 (2), pages 215–220, April 1997.
- [167] A. Lempel. Cryptography in Transition. *Computing Surveys*, Dec. 1979.
- [168] A.K. Lenstra, H.W. Lenstra, L. Lovász. Factoring polynomials with rational coefficients. *Mathematische Annalen* 261, pages 515–534, 1982.
- [169] L.A. Levin. Average Case Complete Problems. *SIAM Journal on Computing*, Vol. 15, pages 285–286, 1986.
- [170] L.A. Levin. One-Way Function and Pseudorandom Generators. *Combinatorica*, Vol. 7, pages 357–363, 1987.
- [171] L.A. Levin. Randomness and Non-determinism. *J. Symb. Logic*, Vol. 58(3), pages 1102–1103, 1993.
- [172] M. Li and P. Vitanyi. *An Introduction to Kolmogorov Complexity and its Applications*. Springer Verlag, August 1993.

- [173] Y. Lindell. A Simpler Construction of CCA2-Secure Public-Key Encryption Under General Assumptions. In preparation, 2002.
- [174] J.H. van Lint. *Introduction to Coding Theory*. Springer-Verlag, Graduate Texts in Mathematics (#88), New York, 1982.
- [175] A. Lubotzky, R. Phillips, P. Sarnak, Ramanujan Graphs. *Combinatorica*, Vol. 8, pages 261–277, 1988.
- [176] M. Luby. *Pseudorandomness and Cryptographic Applications*. Princeton University Press, 1996.
- [177] M. Luby and C. Rackoff. How to Construct Pseudorandom Permutations from Pseudorandom Functions. *SIAM Journal on Computing*, Vol. 17, 1988, pages 373–386.
- [178] C. Lund, L. Fortnow, H. Karloff, and N. Nisan. Algebraic Methods for Interactive Proof Systems. *Journal of the ACM*, Vol. 39, No. 4, pages 859–868, 1992.
- [179] U. Maurer. Secret Key Agreement by Public Discussion from Common Information. *IEEE Trans. on Inform. Th.*, Vol. 39 (No. 3), pages 733–742, May 1993.
- [180] A.J. Menezes, P.C. van Oorschot and S.A. Vanstone. *Handbook of Applied Cryptography*. CRC Press, 1996.
- [181] R.C. Merkle. Secure Communication over Insecure Channels. *CACM*, Vol. 21, No. 4, pages 294–299, 1978.
- [182] R.C. Merkle. Protocols for public key cryptosystems. In *Proc. of the 1980 Symposium on Security and Privacy*.
- [183] R.C. Merkle. A Digital Signature Based on a Conventional Encryption Function. In *Crypto87*, Springer-Verlag Lecture Notes in Computer Science (Vol. 293), 1987, pages 369–378.
- [184] R.C. Merkle. A Certified Digital Signature Scheme. In *Crypto89*, Springer-Verlag Lecture Notes in Computer Science (Vol. 435), pages 218–238.
- [185] R.C. Merkle and M.E. Hellman. Hiding Information and Signatures in Trapdoor Knapsacks. *IEEE Trans. Inform. Theory*, Vol. 24, pages 525–530, 1978.
- [186] S. Micali, C. Rackoff, and B. Sloan. The Notion of Security for Probabilistic Cryptosystems. *SIAM Journal on Computing*, Vol. 17, pages 412–426, 1988.
- [187] S. Micali and P. Rogaway. Secure Computation. In *Crypto91*, Springer-Verlag Lecture Notes in Computer Science (Vol. 576), pages 392–404.

- [188] D. Micciancio. Oblivious Data Structures: Applications to Cryptography. In *29th ACM Symposium on the Theory of Computing*, pages 456–464, 1997.
- [189] G.L. Miller. Riemann’s Hypothesis and Tests for Primality. *Journal of Computer and System Science*, Vol. 13, pages 300–317, 1976.
- [190] R. Motwani and P. Raghavan. *Randomized Algorithms*, Cambridge University Press, 1995.
- [191] National Bureau of Standards. *Federal Information Processing Standards*, Publ. 46 (DES 1977).
- [192] National Institute for Standards and Technology. Digital Signature Standard (DSS), *Federal Register*, Vol. 56, No. 169, August 1991.
- [193] M. Naor. Bit Commitment using Pseudorandom Generators. *Journal of Cryptology*, Vol. 4, pages 151–158, 1991.
- [194] M. Naor, R. Ostrovsky, R. Venkatesan and M. Yung. Zero-Knowledge Arguments for NP can be Based on General Assumptions. *Journal of Cryptology*, Vol. 11, pages 87–108, 1998.
- [195] M. Naor and O. Reingold. Synthesizers and their Application to the Parallel Construction of Pseudo-Random Functions. In *36th IEEE Symposium on Foundations of Computer Science*, pages 170–181, 1995.
- [196] M. Naor and O. Reingold. On the Construction of Pseudo-Random Permutations: Luby-Rackoff Revisited. *Journal of Cryptology*, Vol. 12 (1), pages 29–66, 1999.
- [197] M. Naor and O. Reingold. From Unpredictability to Indistinguishability: A Simple Construction of Pseudorandom Functions from MACs. In *Crypto98*, Springer Lecture Notes in Computer Science (Vol. 1464), pages 267–282.
- [198] M. Naor and M. Yung. Universal One-Way Hash Functions and their Cryptographic Application. *21st ACM Symposium on the Theory of Computing*, 1989, pages 33–43.
- [199] M. Naor and M. Yung. Public-Key Cryptosystems Provably Secure Against Chosen Ciphertext Attacks. In *22nd ACM Symposium on the Theory of Computing*, pages 427–437, 1990.
- [200] N. Nisan and D. Zuckerman. Randomness is Linear in Space. *Journal of Computer and System Science*, Vol. 52 (1), pages 43–52, 1996.
- [201] A.M. Odlyzko. The future of integer factorization. *CryptoBytes* (The technical newsletter of RSA Laboratories), Vol. 1 (No. 2), pages 5-12, 1995. Available from <http://www.research.att.com/~amo>

- [202] A.M. Odlyzko. Discrete logarithms and smooth polynomials. In *Finite Fields: Theory, Applications and Algorithms*, G. L. Mullen and P. Shiue, eds., Amer. Math. Soc., Contemporary Math. Vol. 168, pages 269–278, 1994. Available from <http://www.research.att.com/~amo>
- [203] T. Okamoto. On relationships between statistical zero-knowledge proofs. In *28th ACM Symposium on the Theory of Computing*, pages 649–658, 1996.
- [204] R. Ostrovsky and A. Wigderson. One-Way Functions are essential for Non-Trivial Zero-Knowledge. In *2nd Israel Symp. on Theory of Computing and Systems*, IEEE Comp. Soc. Press, pages 3–17, 1993.
- [205] R. Ostrovsky and M. Yung. How to Withstand Mobile Virus Attacks. In *10th ACM Symposium on Principles of Distributed Computing*, pages 51–59, 1991.
- [206] T.P. Pedersen and B. Pfitzmann. Fail-Stop Signatures. *SIAM Journal on Computing*, Vol. 26/2, pages 291–330, 1997. Based on several earlier work (see first footnote in the paper).
- [207] B. Pfitzmann. *Digital Signature Schemes (General Framework and Fail-Stop Signatures)*. Springer Lecture Notes in Computer Science (Vol. 1100), 1996.
- [208] V. Pratt. Every Prime has a Succinct Certificate. *SIAM Journal on Computing*, Vol. 4, pages 214–220, 1975.
- [209] M.O. Rabin. Probabilistic Algorithm for Testing Primality. *Journal of Number Theory*, Vol. 12, pages 128–138, 1980.
- [210] M.O. Rabin. Digitalized Signatures. In *Foundations of Secure Computation* (R.A. DeMillo et. al. eds.), Academic Press, 1977.
- [211] M.O. Rabin. Digitalized Signatures and Public Key Functions as Intractable as Factoring. MIT/LCS/TR-212, 1979.
- [212] M.O. Rabin. How to Exchange Secrets by Oblivious Transfer. Tech. Memo TR-81, Aiken Computation Laboratory, Harvard U., 1981.
- [213] C. Rackoff and D.R. Simon. Non-Interactive Zero-Knowledge Proof of Knowledge and Chosen Ciphertext Attack. In *Crypto91*, Springer Verlag, Lecture Notes in Computer Science (Vol.), pages 433–444.
- [214] R. Raz. A Parallel Repetition Theorem. *SIAM Journal on Computing*, Vol. 27 (3), pages 763–803, 1998.
- [215] R. Richardson and J. Kilian. On the Concurrent Composition of Zero-Knowledge Proofs. In *EuroCrypt99*, Springer LNCS 1592, pages 415–413.

- [216] R. Rivest, A. Shamir and L. Adleman. A Method for Obtaining Digital Signatures and Public Key Cryptosystems. *CACM*, Vol. 21, Feb. 1978, pages 120–126.
- [217] J. Rompel. One-way Functions are Necessary and Sufficient for Secure Signatures. In *22nd ACM Symposium on the Theory of Computing*, 1990, pages 387–394.
- [218] A. Sahai. Non-Malleable Non-Interactive Zero Knowledge and Achieving Chosen-Ciphertext Security. In *40th IEEE Symposium on Foundations of Computer Science*, pages 543–553, 1999.
- [219] A. Sahai. Improved Constructions Achieving Chosen-Ciphertext Security. In preparation, 2001. See [76].
- [220] A. Sahai and S. Vadhan. A Complete Promise Problem for Statistical Zero-Knowledge. In *38th IEEE Symposium on Foundations of Computer Science*, pages 448–457, 1997.
- [221] C.P. Schnorr and H.H. Horner, Attacking the Chor-Rivest Cryptosystem by Improved Lattice Reduction. In *EuroCrypt95*, Springer-Verlag Lecture Notes in Computer Science (Vol. 921), pages 1–12.
- [222] A. Shamir. How to Share a Secret. *CACM*, Vol. 22, Nov. 1979, pages 612–613.
- [223] A. Shamir. A Polynomial-Time Algorithm for Breaking the Merkle-Hellman Cryptosystem. In *23rd IEEE Symposium on Foundations of Computer Science*, pages 145–152, 1982.
- [224] A. Shamir. IP = PSPACE. *Journal of the ACM*, Vol. 39, No. 4, pages 869–877, 1992.
- [225] A. Shamir, R.L. Rivest, and L. Adleman. Mental Poker. MIT/LCS Report TM-125, 1979.
- [226] C.E. Shannon. Communication Theory of Secrecy Systems. *Bell Sys. Tech. J.*, Vol. 28, pages 656–715, 1949.
- [227] M. Sipser. A Complexity Theoretic Approach to Randomness. In *15th ACM Symposium on the Theory of Computing*, pages 330–335, 1983.
- [228] M. Sipser. *Introduction to the Theory of Computation*. PWS Publishing Company, 1997.
- [229] R. Solovay and V. Strassen. A Fast Monte-Carlo Test for Primality. *SIAM Journal on Computing*, Vol. 6, pages 84–85, 1977. Addendum in *SIAM Journal on Computing*, Vol. 7, page 118, 1978.
- [230] D. Stinson Universal hashing and authentication codes. *Designs, Codes and Cryptography*, Vol. 4, pages 369–380, 1994.

- [231] M. Sudan. Decoding of Reed-Solomon Codes beyond the error-correction Bound. *Jour. of Complexity*, Vol. 13 (1), pages 180–193, 1997.
- [232] M. Tompa and H. Woll, Random Self-Reducibility and Zero-Knowledge Interactive Proofs of Possession of Information. In *28th IEEE Symposium on Foundations of Computer Science*, pages 472–482, 1987.
- [233] S. Vadhan. A Study of Statistical Zero-Knowledge Proofs. PhD Thesis, Department of Mathematics, MIT, 1999.
- [234] A. Vardi. Algorithmic Complexity in Coding Theory and the Minimum Distance Problem. In *29th ACM Symposium on the Theory of Computing*, pages 92–108, 1997.
- [235] U.V. Vazirani and V.V. Vazirani. Efficient and Secure Pseudo-Random Number Generation. *25th IEEE Symposium on Foundations of Computer Science*, pages 458–463, 1984.
- [236] M. Wegman and L. Carter. New Hash Functions and their Use in Authentication and Set Equality. *Journal of Computer and System Science*, Vol. 22, 1981, pages 265–279.
- [237] A. D. Wyner. The Wire-Tap Channel. *Bell System Technical Journal*, Vol. 54 (No. 8), pages 1355–1387, Oct. 1975.
- [238] A.C. Yao. Theory and Application of Trapdoor Functions. In *23rd IEEE Symposium on Foundations of Computer Science*, pages 80–91, 1982.
- [239] A.C. Yao. How to Generate and Exchange Secrets. In *27th IEEE Symposium on Foundations of Computer Science*, pages 162–167, 1986.