

CURRICULUM VITAE
Venkatesan Guruswami

July 2017

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1 Personal Data

Born September, 1976 in Chennai, India.
Citizen of the United States, and Overseas Citizen of India.

2 Education

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA.

Ph.D., Computer Science August 2001
Dissertation: List Decoding of Error-Correcting Codes
Winner, ACM Doctoral Dissertation Award, 2002.

Advisor: Professor **Madhu Sudan**

Master of Science, Computer Science May 1999
Thesis: Query-efficient Checking of Proofs and Improved PCP Characterizations of NP.

INDIAN INSTITUTE OF TECHNOLOGY, MADRAS (Chennai, India)

Bachelor of Technology (B.Tech), Computer Science and Engineering June 1997

3 Postdoctoral fellowship

MILLER RESEARCH FELLOW Sept 2001 - Aug 2002
Miller Institute for Basic Research in Science
University of California, Berkeley, CA.
(Hosted in the Department of Electrical Engineering and Computer Science by Professors Christos Papadimitriou and Umesh Vazirani.)

4 Academic Positions

PROFESSOR July 2014 - present
Computer Science Department
Carnegie Mellon University, Pittsburgh, PA.

VISITING RESEARCHER January-June 2014
Microsoft Research New England.

ASSOCIATE PROFESSOR (tenured) July 2009 - June 2014
Computer Science Department
Carnegie Mellon University, Pittsburgh, PA.

VISITING ASSOCIATE PROFESSOR Sept 2008 - June 2009
Computer Science Department
Carnegie Mellon University, Pittsburgh, PA.

ASSOCIATE PROFESSOR (tenured; on leave) Sept 2007 - June 2009
Department of Computer Science and Engineering
University of Washington, Seattle, WA.

MEMBER, SCHOOL OF MATHEMATICS
Institute for Advanced Study, Princeton, NJ.

Sept 2007 - May 2008

ASSISTANT PROFESSOR
Department of Computer Science and Engineering
University of Washington, Seattle, WA.

Sept 2002 - Sept 2007

5 Research Interests

I am broadly interested in Theoretical Computer Science. Specific areas of interest include the theory of error-correcting codes and its applications, approximation algorithms and hardness of approximation, probabilistically checkable proofs, explicit combinatorial constructions, the theory of pseudorandomness, computational and communication complexity, streaming and sub-linear computation, and algebraic algorithms.

6 Awards and Honors

EATCS Presburger Award, 2012.

Invited speaker, International Congress of Mathematicians, August 2010.

Best paper award (joint with C. Umans and S. Vadhan), Computational Complexity Conference, 2007.

David and Lucile Packard Fellowship for Science and Engineering, 2005. (One out of **16** fellows.)

Alfred P. Sloan Foundation Fellow, 2005.

Work on algebraic error-correction featured by the National Science Foundation in its “Discoveries” section. Original article, dated August 11, 2004, available at:
http://nsf.gov/discoveries/disc_summ.jsp?cntn_id=100256&org=NSF.

NSF Faculty Early Career Development (CAREER) Award, 2004.

Association for Computing Machinery (ACM) Doctoral Dissertation Award, 2002, for best doctoral thesis in Computer Science and Engineering.

George M. Sprowls Award, MIT, 2002, for best Ph.D thesis submitted to the Department of Electrical Engineering and Computer Science, MIT.

Miller Research Fellowship, 2001.

IEEE Information Theory Society Paper Award (joint with Madhu Sudan), 2000.

IBM Graduate Research Fellowship, 1999-2001.

AT&T Leadership Award, 1997

3rd position, Indian National Mathematical Olympiad, 1992.

National Board for Higher Mathematics (NBHM) scholarship, India, 1993-97.

National Talent Search Scholar, India, 1991.

7 Professional activities

- **Editor-in-Chief**, ACM Transactions on Computation Theory, Feb 2017-present.
- **Technical Program Committee co-chair**, 2018 IEEE International Symposium on Information Theory.
- Co-organizer, Dagstuhl Seminar in June 2018 on The Constraint Satisfaction Problem: Complexity and Approximability.
- **Program Committee Chair**, 56th IEEE Conference on Foundations of Computer Science (FOCS 2015).
- Co-organizer, Workshop on Mathematics of Information-Theoretic Cryptography, Institute of Mathematical Science, National University of Singapore, September 2016.
- Co-organizer, Program on Information Theory (Spring 2015 semester), Simons Institute for the Theory of Computing.
- Co-organizer, Dagstuhl Seminar in July 2015 on The Constraint Satisfaction Problem: Complexity and Approximability.
- Member, Board of Trustees and Awards Chair, Computational Complexity Foundation, Inc., August 2014-present.
- SIGACT executive committee member, July 2012-June 2015.
- Conference Steering Committee, IEEE Conference on Computational Complexity (CCC), July 2012-August 2014.
- Co-organizer, School and Workshop on Mathematics of Information-Theoretic Cryptography, Lorentz Center, Leiden, May 13-17 and May 21-25, 2013,
- **Program Committee Chair**, 27th IEEE Conference on Computational Complexity (CCC'12), June 2012.
- Co-organizer, Summer Thematic Program on Constraint Satisfaction, Fields Institute, Toronto, July-August 2011.
- **Journal Editorial Boards:**
 - Journal of the ACM, 2015-present.
 - SIAM Journal on Computing, 2009-present.
 - Research in the Mathematical Sciences, 2016-present.
 - IEEE Transactions on Information Theory, 2010-2013.
 - ACM Transactions on Computation Theory, 2008-2015.
- Scientific board member, Electronic Colloquium on Computational Complexity, 2009-present.
- Area editor (Coding algorithms), Encyclopedia of Algorithms (published by Springer)
- Guest editorship for journal special issues:
 - Guest co-editor (with S. Chawla and C. Dwork), *SIAM J. Computing*, special issue on selected papers from STOC 2008.
 - Guest co-editor (with V. Kabanets), *Computational Complexity*, **16**(2), 2007. Special issue on selected papers from CCC 2006 – the 21st IEEE Conference on Computational Complexity.
 - Guest co-editor (with E. Cohen), *Journal of Computer and System Sciences*, **68**(4), June 2004. Special issue on selected papers from FOCS 2002.
- Conference Program Committee memberships:

- (i) *APPROX 2017*, 20th Intl. Workshop on Approximation Algorithms for Combinatorial Optimization Problems, August 2017.
- (ii) *STOC 2015*, 47th ACM Symposium on Theory of Computing, June 2015.
- (iii) *ISITA 2012*, International Symposium on Information Theory and its Applications, October 2012.
- (iv) *ISIT 2012*, IEEE International Symposium on Information Theory, July 2012.
- (v) *STOC 2011*, 43rd ACM Symposium on Theory of Computing, June 2011.
- (vi) *CCC 2010*, 25th IEEE Conference on Computational Complexity, June 2010.
- (vii) *SODA 2010*, ACM-SIAM Symposium on Discrete Algorithms, January 2010.
- (viii) *FSTTCS 2008*, 28th Annual Conference on Foundations of Software Technology and Theoretical Computer Science, December 2008.
- (ix) *STOC 2008*, 40th ACM Symposium on Theory of Computing, May 2008.
- (x) *ITW 2008*, Information Theory Workshop, May 2008.
- (xi) *LATIN 2008*, 8th Latin American Theoretical Informatics Symposium, April 2008.
- (xii) *CATS 2008*, Computing: The Australasian Theory Symposium, January 2008.
- (xiii) *APPROX 2007*, 10th Intl. Workshop on Approximation Algorithms for Combinatorial Optimization Problems, August 2007.
- (xiv) *ISIT 2006*, IEEE International Symposium on Information Theory, July 2006.
- (xv) *CCC 2006*, 21st IEEE Conference on Computational Complexity, July 2006.
- (xvi) *FOCS 2005*, 46th Annual IEEE Symposium on Foundations of Computer Science, October 2005.
- (xvii) *FSTTCS 2005*, 25th Annual Conference on Foundations of Software Technology and Theoretical Computer Science, December 2005.
- (xviii) *FOCS 2002*, 43rd Annual IEEE Symposium on Foundations of Computer Science, November 2002.
- *Organizer, Minisymposium on coding theory, DM 2006: SIAM Conference on Discrete Mathematics*, June 2006.
- NSF panel member for Computing and Communication Foundations (CCF) and Division of Mathematical Sciences (DMS), various years.
- Reviewer of research proposals for Israel Science Foundation (ISF), various years.
- Reviewer of research proposals for United States-Israel Binational Science Foundation (BSF), various years.

8 Graduate student and postdoc supervision

Current Ph.D. students

- Vijay Bhattiprolu
- Nicolas Resch (co-advised with Bernhard Haeupler)

Graduated Ph.D. students

- Atri Rudra, June 2007.
Dissertation title: *List decoding and property testing of error-correcting codes*.
Co-winner of the William Chan Memorial Dissertation Award at the University of Washington.
Atri is an Associate Professor at University at Buffalo, The State University of New York.

- Prasad Raghavendra, August 2009.
Dissertation title: *Approximating NP-hard problems: Efficient algorithms and their limits*.
Co-winner of the William Chan Memorial Dissertation Award at the University of Washington.
Prasad is an Associate Professor at the University of California, Berkeley.
- Ali Kemal Sinop, May 2012.
Dissertation title: *Graph partitioning and semidefinite programming hierarchies*.
Ali Kemal is currently at the University of Illinois at Urbana-Champaign.
- Yuan Zhou, August 2014.
Dissertation title: *New Directions in Approximation Algorithms and Hardness of Approximation*.
Yuan is currently an Assistant Professor at Indiana University.
- Carol Wang, September 2015.
Dissertation title: *Beyond unique decoding: topics in error-correcting codes*.
Carol is currently a postdoc at the National University of Singapore.
- Ameya Velingker, August 2016.
Dissertation title: *New Directions in Coding Theory: Capacity and Limitations*
Ameya is currently a postdoc at the École Polytechnique Fédérale de Lausanne.
- Euiwoong Lee, May 2017.
Dissertation title: *Optimal Approximabilities beyond CSPs*
Euiwoong will be a Simons Fellow in Fall 2017 and then a postdoctoral fellow at NYU.

Postdocs

- Mary Wootters, Sept 2014-July 2016.
Current employment: Stanford University (Assistant Professor)
- Ankit Singh Rawat, Sept 2015-August 2016.
Current employment: MIT (postdoc)
- Aravindan Vijayaraghavan (Simons postdoctoral fellow), Sept 2012-July 2014.
Current employment: Northwestern University.
- Mahdi Cheraghchi, Sept 2011-June 2013.
Current employment: Imperial College, London (Assistant Professor)
- Krzysztof Onak (Simons postdoctoral fellow), Sept 2010-Aug 2012.
Current employment: IBM T.J. Watson Research Center (Research scientist)
- Rishi Saket, Sept 2009-Aug 2010.
Currently employment: IBM Research India (Researcher)
- Parikshit Gopalan, March 2007-June 2008.
Current employment: VMWare Research (Research scientist)

9 Selected invited talks/lecture series

(\approx last 6 years)

- T1) “Linear-algebraic pseudorandomness: Subspace designs and dimension expanders,” Simons Institute Workshop on Proving and Using Pseudorandomness, Berkeley, March 2017.

- T2) “Progress in error-correction: New codes for old noise models,” Distinguished Lecture Series, School of Computer and Communication Sciences, École Polytechnique Fédérale de Lausanne, November 2016.
- T3) “ $(2 + \epsilon)$ -SAT is NP-hard, and further results on promise constraint satisfaction,” Krannert School of Management Speaker Series, Purdue University, November 2016.
- T4) “Progress in error-correction: New codes for old noise models,” Distinguished Lecture Series, College of Information and Computer Sciences, University of Massachusetts, Amherst, October 2016.
- T5) “Repairing Reed-Solomon codes,” Dagstuhl seminar on Coding Theory in the time of big data, August 2016.
- T6) “Recent progress on codes for worst-case deletions,” ICERM Workshop on Algorithmic Coding Theory, June 2016.
- T7) “An Improved Bound on the Fraction of Correctable Deletions,” Simons Institute Information Theory reunion workshop, June 2016.
- T8) “Analysis of polymorphisms and promise constraint satisfaction,” Simons Symposium on Analysis of Boolean Functions, Schloss Elmau, April 2016.
- T9) “Coloring low-discrepancy hypergraphs, Weak Polymorphisms, and Promise Constraint Satisfaction,” NII Shonan Meeting on Current Trends in Combinatorial Optimization, April 2016.
- T10) “Recent progress on codes for worst-case deletions,” Algorithms and Computation Theory Seminar, University of Texas at Austin, February 2016.
- T11) “Repairing Reed-Solomon Codes,” Oberwolfach Complexity Theory Meeting, November 2015.
- T12) “Progress in error-correction: New codes for old noise models,” EECS Distinguished Speaker Series, Northwestern University, October 2015.
- T13) “Progress in error-correction: New codes for old noise models,” ECE Colloquium, University of Illinois at Urbana-Champaign, October 2015.
- T14) “List and local error-correction,” 8th North American School of Information Theory, 3 hour tutorial, August 10-13, 2015.
- T15) “Advances in Error-correction: List decoding and polar coding,” Swedish Summer School in Computer Science, Five 2.5 hour lectures, June 28-July 4, 2015.
- T16) “Communication with Imperfectly Shared Randomness,” Banff workshop on Communication Complexity and Applications: August 2014.
- T17) “Reed-Muller testing: implications for small set expansion & hypergraph coloring,” Bertinoro Workshop on Sublinear Algorithms, Bertinoro, Italy: May 2014.
- T18) “Polar codes: Reliable communication with complexity scaling polynomially in the gap to Shannon capacity,” Invited talk, New York area Theory Day, Columbia University: April 2014.
- T19) “Polar codes: Reliable communication with complexity polynomial in the gap to Shannon capacity,” Coding Theory Workshop, AUB Center for Advanced Mathematical Sciences, Beirut, Lebanon: April 2014.
- T20) “List error-correction with information-theoretically minimal redundancy,” 3 hour invited lecture, 2014 IEEE European School of Information Theory, Tallinn, Estonia: April 2014.
- T21) “Superlinear lower bounds for multipass graph processing,” Brown ICERM Theory Seminar: April 2014.

- T22) “Polar codes: Reliable communication with complexity polynomial in the gap to Shannon capacity,” Invited talk at 33rd Conference on Foundations of Software Technology and Theoretical Computer Science (FSTTCS), Guwahati, India: December 2013.
- T23) “List decoding by evading subspaces,” 3 hour lecture, Microsoft Research New England/MIT theory reading group: February 2014.
- T24) “Polar codes: Reliable communication with complexity scaling polynomially in the gap to Shannon capacity,” MIT Theory Colloquium: February 2014.
- T25) Simons Symposium on New Approaches in Approximation Algorithms for NP-hard problems, “Rounding Lasserre SDPs using column selection for spectrum-based guarantees,” February 2013.
- T26) University of Warsaw, Phdopen lectures, “Algorithmic coding theory: Some recent advances,” 7 hours of lectures, November 2012.
- T27) University of Maryland, Invited lecture in theory day, “Linear-algebraic list decoding and subspace-evasive sets,” October 2012.
- T28) Tsinghua-MIT-CUHK Research Center Workshop on Theoretical Computer Science, “Lasserre hierarchy, higher eigenvalues, and graph partitioning,” July 2012.
- T29) Presburger Award lecture, ICALP 2012, “List decoding and pseudorandomness: A web of connections,” July 2012.
- T30) Institute for Advanced Study, CSDM seminar, “Lasserre hierarchy, higher eigenvalues, and graph partitioning,” Feb 2012.
- T31) Charles University, KAM Mathematical Colloquium, “List error-correction algorithms: A survey,” Nov 2011.
- T32) Chennai Mathematical Institute, Workshop on Pseudorandomness, 4 lectures on algebraic list decoding, locally decodable codes, and related pseudorandomness, August 2011.
- T33) Princeton center for computational intractability, Workshop on Approximation Algorithms: The Last Decade and the Next, “PCPs and Inapproximability: Recent Milestones, and New and Continuing Challenges,” June 2011.
- T34) MIT Theory Colloquium, “Bridging Shannon and Hamming: Codes for computationally simple channels,” March 2011.
- T35) Institut Henri Poincare, Workshop on Metric embeddings, algorithms and hardness of approximation, “Bypassing UGC: Inapproximability of Subspace Approximation,” January 2011.
- T36) Weizmann Institute, Walmart Lecture Series in Cryptography and Complexity, “Bridging Shannon and Hamming: Codes for computationally simple channels,” December 2010.
- T37) 3rd Eastern Great Lakes Theory of Computation Workshop, University at Buffalo, “Bridging Shannon and Hamming: Codes for computationally simple channels,” October 2010.
- T38) Koetterfest, Workshop on Facets of Coding Theory: from Algorithms to Networks, “On the list-decodability of random linear codes,” September 2010.
- T39) ICM 2010 Satellite Conference On Algebraic and Probabilistic Aspects of Combinatorics and Computing, “List-decodability of random linear codes,” August 2010.
- T40) International Congress of Mathematicians (ICM), Invited sectional talk (Mathematical aspects of Computer Science), “Bridging Shannon and Hamming: List Error-Correction with Optimal Rate,” August 2010.

10 Publications

10.1 Books

- [B1] V. Guruswami. *Algorithmic Results in List Decoding*, volume 2 of *Foundations and Trends in Theoretical Computer Science (FnT-TCS)*. NOW publishers, January 2007.
- [B2] V. Guruswami. *List decoding of error-correcting codes*. Springer, Lecture Notes in Computer Science 3282, 2004. (Winning Thesis of the 2002 ACM Doctoral Dissertation Competition).

10.2 Journal Publications

- [J1] V. Guruswami, C. Xing, and C. Yuan. Constructions of subspace designs via algebraic function fields. *Transactions of the AMS*, 2017. Accepted for publication.
- [J2] V. Guruswami and E. Lee. Inapproximability of H-transversal/packing. *SIAM J. Disc. Math.*, 2017 (Published online).
- [J3] J. Brakensiek, V. Guruswami, and S. Zbarsky. Efficient low-redundancy codes for correcting multiple deletions. *IEEE Trans. on Information Theory*, 2017. Accepted for publication.
- [J4] V. Guruswami and M. Wootters. Repairing Reed-Solomon codes. *IEEE Trans. Information Theory*, 2017. Accepted for publication.
- [J5] V. Guruswami and E. Lee. Strong inapproximability results on balanced rainbow-colorable hypergraphs. *Combinatorica*, 2015. Accepted.
- [J6] P. Austrin, V. Guruswami, and J. Håstad. $(2 + \epsilon)$ -SAT is NP-hard. *SIAM Journal on Computing*, 2017. Accepted for publication.
- [J7] C. L. Canonne, V. Guruswami, R. Meka, and M. Sudan. Communication with imperfectly shared randomness. *IEEE Trans. Information Theory*, 2017. Accepted for publication.
- [J8] V. Guruswami and E. Lee. Towards a characterization of approximation resistance for symmetric CSPs. *Theory of Computing*, 2017. Accepted for publication.
- [J9] B. Bukh, V. Guruswami, and J. Håstad. An improved bound on the fraction of correctable deletions. *IEEE Transactions on Information Theory*, 63(1):93–103, 2017.
- [J10] V. Guruswami and C. Wang. Deletion codes in the high-noise and high-rate regimes. *IEEE Trans. Information Theory*, 63(4):1961–1970, 2017.
- [J11] V. Guruswami and E. Lee. Nearly optimal np-hardness of unique coverage. *SIAM J. Comput.*, 46(3):1018–1028, 2017.
- [J12] V. Guruswami, L. Jin, and C. Xing. Efficiently list-decodable punctured reed-muller codes. *IEEE Trans. Information Theory*, 63(7):4317–4324, 2017.
- [J13] V. Guruswami, P. Harsha, J. Håstad, S. Srinivasan, and G. Varma. Super-polylogarithmic hypergraph coloring hardness via low-degree long codes. *SIAM J. Comput.*, 46(1):132–159, 2017.
- [J14] M. Cheraghchi and V. Guruswami. Non-malleable coding against bit-wise and split-state tampering. *Journal of Cryptology*, 30(1):191–241, 2017.
- [J15] V. Guruswami and A. Smith. Optimal rate code constructions for computationally simple channels. *Journal of the ACM*, 63(4):35:1–35:37, 2016.

- [J16] V. Guruswami, C. Wang, and C. Xing. Explicit list-decodable rank-metric and subspace codes via subspace designs. *IEEE Trans. Information Theory*, 62(5):2707–2718, 2016.
- [J17] V. Guruswami and E. Lee. Simple proof of hardness of Feedback Vertex Set. *Theory of Computing*, 12(6):1–11, 2016.
- [J18] V. Guruswami and K. Onak. Superlinear lower bounds for multipass graph processing. *Algorithmica*, 76(3):654–683, 2016.
- [J19] V. Guruswami and E. Lee. Complexity of approximating CSP with balance / hard constraints. *Theory Comput. Syst.*, 59(1):76–98, 2016.
- [J20] M. Cheraghchi and V. Guruswami. Capacity of non-malleable codes. *IEEE Transactions on Information Theory*, 62(3):1097–1118, 2016.
- [J21] V. Guruswami and S. Kopparty. Explicit subspace designs. *Combinatorica*, 36(2):161–185, 2016.
- [J22] V. Guruswami, P. Raghavendra, R. Saket, and Y. Wu. Bypassing UGC from some optimal geometric inapproximability results. *ACM Trans. Algorithms*, 12(1):6, 2016.
- [J23] I. Dinur and V. Guruswami. PCPs via low-degree long code and hardness for constrained hypergraph coloring. *Israel Journal of Mathematics*, 209(2):611–649, 2015.
- [J24] V. Guruswami and C. Xing. Optimal rate algebraic list decoding using narrow ray class fields. *J. Comb. Theory, Ser. A*, 129:160–183, 2015.
- [J25] V. Guruswami and P. Xia. Polar codes: Speed of polarization and polynomial gap to capacity. *IEEE Transactions on Information Theory*, 61(1):3–16, 2015.
- [J26] V. Guruswami, S. Sachdeva, and R. Saket. Inapproximability of minimum vertex cover on k -uniform k -partite hypergraphs. *SIAM Journal on Discrete Mathematics*, 29(1):36–58, 2015.
- [J27] V. Guruswami, A. K. Sinop, and Y. Zhou. Constant factor Lasserre integrality gaps for graph partitioning problems. *SIAM Journal on Optimization*, 24(4):1698–1717, 2014.
- [J28] V. Guruswami and S. Narayanan. Combinatorial limitations of average-radius list-decoding. *IEEE Transactions on Information Theory*, 60(10):5827–5842, 2014.
- [J29] M. Cheraghchi, V. Guruswami, and A. Velingker. Restricted isometry of Fourier matrices and list decodability of random linear codes. *SIAM Journal on Computing*, 42(5):1888–1914, 2013.
- [J30] V. Guruswami and C. Wang. Linear-algebraic list decoding for variants of Reed-Solomon codes. *IEEE Transactions on Information Theory*, 59(6):3257–3268, 2013.
- [J31] V. Guruswami and A. K. Sinop. Improved inapproximability results for maximum k -colorable subgraph. *Theory of Computing*, 9(11):413–435, 2013.
- [J32] V. Guruswami and Y. Zhou. Tight bounds on the approximability of almost-satisfiable horn sat and exact hitting set. *Theory of Computing*, 8(1):239–267, 2012.
- [J33] V. Feldman, V. Guruswami, P. Raghavendra, and Y. Wu. Agnostic learning of monomials by halfspaces is hard. *SIAM J. Comput.*, 41(6):1558–1590, 2012.
- [J34] P. Gopalan, V. Guruswami, and P. Raghavendra. List decoding tensor products and interleaved codes. *SIAM Journal on Computing*, 40(5):1432–1462, 2011.
- [J35] A. Chakrabarti, V. Guruswami, A. Wirth, and A. Wirth. The query complexity of estimating weighted averages. *Acta Inf.*, 48(7-8):417–426, 2011.

- [J36] V. Guruswami, J. Håstad, R. Manokaran, P. Raghavendra, and M. Charikar. Beating the random ordering is hard: Every ordering CSP is approximation resistant. *SIAM J. Comput.*, 40(3):878–914, 2011.
- [J37] P. Gopalan and V. Guruswami. Hardness amplification within NP against deterministic algorithms. *Journal of Computer and System Sciences*, 77(1):107–121, 2011. Special issue to celebrate the award of the Kyoto Prize to Professor Richard Karp (invited paper).
- [J38] V. Guruswami, J. Håstad, and S. Kopparty. On the list-decodability of random linear codes. *IEEE Transactions on Information Theory*, 57(2):718–725, 2011. Special issue dedicated to the scientific legacy of Ralf Koetter.
- [J39] V. Guruswami and A. Rudra. Soft decoding, dual BCH codes, and better list-decodable ϵ -biased codes. *IEEE Transactions on Information Theory*, 57(2):705–717, 2011. Special issue dedicated to the scientific legacy of Ralf Koetter.
- [J40] V. Guruswami and S. Vadhan. A lower bound on list size for list decoding. *IEEE Transactions on Information Theory*, 56(11):5681–5688, 2010.
- [J41] M. Andrews, J. Chuzhoy, V. Guruswami, S. Khanna, K. Talwar, and L. Zhang. Inapproximability of edge-disjoint paths and low congestion routing on undirected graphs. *Combinatorica*, 30(5):485–520, 2010.
- [J42] V. Guruswami and A. Rudra. The existence of concatenated codes list-decodable up to the Hamming bound. *IEEE Transactions on Information Theory*, 56(10):5195–5206, 2010.
- [J43] V. Guruswami. Cyclotomic function fields, Artin-Frobenius automorphisms, and list error-correction with optimal rate. *Algebra and Number Theory*, 4(4):433–463, 2010.
- [J44] V. Guruswami, J. Lee, and A. Razborov. Almost Euclidean sections of ℓ_1^m via expander codes. *Combinatorica*, 30(1):47–68, 2010.
- [J45] E. Ben-Sasson, V. Guruswami, T. Kaufman, M. Sudan, and M. Viderman. Locally testable codes require redundant testers. *SIAM Journal on Computing*, 39(7):3230–3247, 2010.
- [J46] V. Guruswami and P. Raghavendra. Hardness of solving sparse overdetermined linear systems: A 3-query PCP over integers. *ACM Transactions on Computation Theory*, 1(2), 2009.
- [J47] V. Guruswami and P. Raghavendra. Hardness of learning halfspaces with noise. *SIAM Journal on Computing*, 39(2):742–765, 2009.
- [J48] V. Guruswami, C. Umans, and S. Vadhan. Unbalanced expanders and randomness extractors from Parvaresh-Vardy codes. *Journal of the ACM*, 56(4), 2009.
- [J49] V. Guruswami and A. Rudra. Error-correction up to the information-theoretic limit. *Communications of the ACM*, 52(3):87–95, March 2009. Invited Research Highlight.
- [J50] V. Guruswami and A. Rudra. Better binary list-decodable codes via multilevel concatenation. *IEEE Transactions on Information Theory*, 55(1):19–26, January 2009.
- [J51] V. Guruswami and V. Kabanets. Hardness amplification via space-efficient direct products. *Computational Complexity*, 17(4):475–500, December 2008.
- [J52] V. Guruswami and A. Rudra. Explicit codes achieving list decoding capacity: Error-correction with optimal redundancy. *IEEE Transactions on Information Theory*, 54(1):135–150, January 2008.
- [J53] V. Guruswami and A. Patthak. Correlated Algebraic-Geometric codes: Improved list decoding over bounded alphabets. *Mathematics of Computation*, 77(261):447–473, January 2008.

- [J54] P. Gopalan, V. Guruswami, and R. Lipton. Algorithms for modular counting of roots of multivariate polynomials. *Algorithmica*, 50(4):479–496, 2008.
- [J55] N. Alon, V. Guruswami, T. Kaufman, and M. Sudan. Guessing secrets efficiently via list decoding. *ACM Transactions on Algorithms*, 3(4):Article No. 42, November 2007.
- [J56] I. Giotis and V. Guruswami. Correlation clustering with a fixed number of clusters. *Theory of Computing*, 2(13):249–266, 2006.
- [J57] V. Guruswami and A. Rudra. Limits to list decoding Reed-Solomon codes. *IEEE Transactions on Information Theory*, 52(8):3642–3649, August 2006.
- [J58] V. Guruswami and P. Indyk. Linear-time encodable/decodable codes with near-optimal rate. *IEEE Transactions on Information Theory*, 51(10):3393–3400, October 2005.
- [J59] M. Charikar, V. Guruswami, and A. Wirth. Clustering with qualitative information. *Journal of Computer and System Sciences*, 71(3):360–383, October 2005. Special issue: Learning Theory 2003.
- [J60] V. Guruswami and A. Vardy. Maximum-Likelihood Decoding of Reed-Solomon codes is NP-hard. *IEEE Transactions on Information Theory*, 51(7):2249–2256, July 2005.
- [J61] V. Guruswami, D. Micciancio, and O. Regev. The complexity of the covering radius problem. *Computational Complexity*, 14(2):90–121, June 2005. Special issue devoted to selected papers from the 2004 Conference on Computational Complexity (CCC’04).
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10.4 Invited papers and surveys

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- [I3] V. Guruswami. List decoding of binary codes – a brief survey of some recent results. In Y. M. Chee, C. Li, S. Ling, H. Wang, and C. Xing, editors, *IWCC*, volume 5557 of *Lecture Notes in Computer Science*, pages 97–106. Springer, 2009.
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