

CURRICULUM VITAE
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1 Personal Data

Born September, 1976 in Chennai, India. Citizen of India.
Permanent Resident of the United States.

2 Education

MASSACHUSETTS INSTITUTE OF TECHNOLOGY, Cambridge, MA.

Ph.D., Computer Science August 2001
Dissertation: List Decoding of Error-Correcting Codes
Supervisor: 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 Academic Positions

ASSOCIATE PROFESSOR July 2009 - present
Computer Science Department
Carnegie Mellon University, Pittsburgh, PA.

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

ASSOCIATE PROFESSOR Sept 2007 - June 2009
Department of Computer Science and Engineering
University of Washington, Seattle, WA.

MEMBER, SCHOOL OF MATHEMATICS Sept 2007 - May 2008
Institute for Advanced Study, Princeton, NJ.

ASSISTANT PROFESSOR Sept 2002 - Sept 2007
Department of Computer Science and Engineering
University of Washington, Seattle, WA.

MILLER RESEARCH FELLOW Sept 2001 - Aug 2002
Miller Institute for Basic Research in Science
University of California, Berkeley, CA.

4 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, and algebraic algorithms.

5 Awards and Honors

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 M. Sudan), 2000.

IBM Graduate Research Fellowship, 1999-2001.

AT&T Leadership Award, 1997

2nd position in the All India Joint Entrance Examination, 1993, for admissions into the Indian Institutes of Technology (IITs).

3rd position, Indian National Mathematical Olympiad, 1992.

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

National Talent Search Scholar, India, 1991.

6 Professional activities

- *Editorships*
 - Editor, SIAM Journal on Computing.
 - Editor, ACM Transactions on Computation Theory.
 - Editor, Encyclopedia of Algorithms (published by Springer)
 - 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 the *43rd Annual IEEE Symposium on Foundations of Computer Science, November 2002*.
- *Conference Program Committee memberships*:
 - (i) *CCC 2010*, 25th IEEE Conference on Computational Complexity, June 2010.
 - (ii) *SODA 2010*, ACM-SIAM Symposium on Discrete Algorithms, January 2010.
 - (iii) *FSTTCS 2008*, 28th Annual Conference on Foundations of Software Technology and Theoretical Computer Science, December 2008.
 - (iv) *STOC 2008*, 40th ACM Symposium on Theory of Computing, May 2008.
 - (v) *ITW 2008*, Information Theory Workshop, May 2008.
 - (vi) *LATIN 2008*, 8th Latin American Theoretical Informatics Symposium, April 2008.
 - (vii) *CATS 2008*, Computing: The Australasian Theory Symposium, January 2008.
 - (viii) *APPROX 2007*, 10th Intl. Workshop on Approximation Algorithms for Combinatorial Optimization Problems, August 2007.
 - (ix) *ISIT 2006*, IEEE International Symposium on Information Theory, July 2006.
 - (x) *CCC 2006*, 21st IEEE Conference on Computational Complexity, July 2006.
 - (xi) *FOCS 2005*, 46th Annual IEEE Symposium on Foundations of Computer Science, October 2005.
 - (xii) *FSTTCS 2005*, 25th Annual Conference on Foundations of Software Technology and Theoretical Computer Science, December 2005.
 - (xiii) *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.
- *National Science Foundation panel membership*
 - Theory of Computing panel, 2008.
 - Combinatorics (DMS) panel, 2007.
 - Theory of Computing panel, 2006.
 - Theory of Computing panel, 2004.
- Reviewer of research proposal for ISF (Israel Science Foundation): 2003, 2004, 2006, and 2008.
- Reviewed research proposal for BSF (United States-Israel Binational Science Foundation), March 2005.

7 Graduate student supervision

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 Assistant 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 currently a postdoc at Microsoft Research New England, and will be an Assistant Professor at Georgia Institute of Technology starting 2010.

Postdocs

- Parikshit Gopalan, March 2007-June 2008.
Current employment: Microsoft Research Silicon Valley.
- Rishi Saket, Sept 2009-current.

Graduate students completed M.S

Chaired the Ph.D. qualifying exam committee, which also recommends award of Masters Degrees, of the following students:

- Widad Machmouchi, Project title: “Explicit interleavers for a Repeat Accumulate Accumulate (RAA) code construction,” 2008.
- Prasad Raghavendra, Project title: “Hardness of learning halfspaces with noise,” 2006.
- Ioannis Giotis, Project title: “Correlation Clustering with a fixed number of clusters,” 2005.
- Atri Rudra, Project title: “Tolerant Locally Testable Codes,” 2005.
- Ethan Phelps-Goodman, Project title: “PCP and the hardness of approximating set cover,” 2005.

8 Invited Talks and Seminars

Dagstuhl seminar on Constraint Satisfaction: *Invited tutorial* “Approximability of constraint satisfaction problems,” October 26-27, 2009.

Carnegie Mellon University, Theory lunch: “Beating the random ordering is hard,” October 21, 2009.

47th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL: “Expander codes over reals, Euclidean sections, and Compressed sensing,” October 1, 2009.

Institute for Theoretical Computer Science, Tsinghua University: “Beating the random ordering is hard: Approximation resistance of Max Acyclic Subgraph and Ordering 3-CSPs,” June 17, 2009.

Institute for Theoretical Computer Science, Tsinghua University: “A sample of two recent results in coding theory and pseudorandomness,” June 10, 2009.

Institute for Theoretical Computer Science Colloquium, Tsinghua University: “List error-correction algorithms and applications: A survey,” June 8, 2009.

Invited speaker, International Workshop of Coding and Cryptology (IWCC), Zhangjiajie, China: “List decoding of binary codes,” June 4, 2009.

University of Washington, Theory seminar: “List decoding product and interleaved codes,” May 12, 2009.

Institute for Advanced Study, Computer Science and Discrete Mathematics seminar: “List decoding product and interleaved codes,” May 5, 2009.

MIT Theory Colloquium: “List decoding product and interleaved codes,” April 7, 2009.

University of California at San Diego, Information Theory and Applications Workshop: “List decoding product and interleaved codes,” February 8, 2009.

Carnegie Mellon University, Algorithms, Combinatorics, and Optimization (ACO) seminar: “Combinatorics of list decoding linear codes,” February 5, 2009.

Pennsylvania State University, Theory seminar: “Coding theory and pseudorandomness: A survey of two recent applications,” January 27, 2009.

Pennsylvania State University, Department of Computer Science Colloquium: “List error-correction algorithms and applications: A survey,” January 26, 2009.

AMS National Meeting, Washington, DC, Invited talk: “Coding theory and pseudorandomness,” January 5, 2009.

Indian Institute of Technology - Madras, Department of Computer Science Seminar: “List error-correction algorithms and applications: A survey,” December 5, 2008.

Institute for Mathematical Sciences, Chennai, Theoretical computer science seminar: “Expander codes, explicit Euclidean sections, and compressed sensing,” December 3, 2008.

Princeton University, Geometry and algorithms workshop: “Expander codes over reals and explicit Euclidean sections,” October 30, 2008.

Carnegie Mellon University, Theory lunch: “Compressed sensing, Euclidean sections, and JL lemma,” October 15, 2008.

École Polytechnique Fédérale de Lausanne: “Expander codes, explicit Euclidean sections, and compressed sensing,” October 1, 2008.

Keynote speaker, International School on Mathematical Cryptology 2008, Faculty of Mathematics and Statistics, Universitat Politècnica de Catalunya: “List error-correction: New constructions and algorithms,” September 26, 2008.

École Nationale Supérieure des Télécommunications, Séminaire de Mathématique des Télécommunications et Séminaire de Mathématiques pour l’Informatique et les Réseaux: “Expander codes, explicit Euclidean sections, and compressed sensing,” September 22, 2008.

Dagstuhl seminar on Computational Complexity of Discrete Problems: “Beating the random ordering is hard,” September 15, 2008.

Invited speaker, The 3rd International Conference on Information Theoretic Security, Calgary, Canada: “List error-correction with optimal information rate,” August 12, 2008.

Weizmann Institute for Science, Foundations of Computer Science seminar: “List decoding of binary codes: New concatenation-based results,” July 1, 2008.

Technion — Israel Institute of Technology, Computer Science Colloquium: “List error-correction: New constructions, algorithms, and applications,” June 24, 2008.

Technion — Israel Institute of Technology, Theoretical computer science seminar: “Expander codes, Euclidean sections, and compressed sensing matrices”, June 15, 2008.

Institute for Advanced Study, Computer Science and Discrete Mathematics seminar: “Artin map, cyclotomic function fields, and folded list-decodable codes,” May 12, 2008.

Rutgers University, DIMACS Theoretical Computer Science Seminar: “List decoding of binary codes: New concatenation-based results,” April, 2008.

Princeton University, Theory lunch seminar: “List decoding of binary codes: New concatenation-based results,” February 29, 2008.

University of Toronto, Theory seminar: “List decoding and pseudorandom constructions: Expanders and extractors from Parvaresh-Vardy codes,” February 22, 2008.

Georgia Institute of Technology, ACO seminar: “Expander codes, compressed sensing matrices, and Euclidean sections of ℓ_1^N ,” February 15, 2008.

New York University, Theory seminar: “Expander codes, compressed sensing matrices, and Euclidean sections of ℓ_1^N ,” January 31, 2008.

17th AAECC Symposium, *Invited talk* in list decoding session: “List decoding and pseudorandom constructions,” Bangalore, India, December 18, 2007.

University of Maryland, College Park, Information and coding seminar: “List decoding with optimal rate,” November 15, 2007.

University of Texas at Austin, Algorithms and Computation Theory seminar: “Expander codes, pseudorandom matrices, and Euclidean sections of ℓ_1^N ,” November 9, 2007.

Columbia University, Theory seminar: “Lossless Expanders from Parvaresh-Vardy Codes with applications to Randomness Extraction,” October 3, 2007.

Institute for Advanced Study, Computer Science and Discrete Mathematics seminar: “Hardness of solving sparse overdetermined linear systems,” September 25, 2007.

Oberwolfach complexity theory meeting, Mathematisches Forschungsinstitut Oberwolfach: “Reed-Solomon codes, low-degree automorphisms, and error-correction with optimal rate,” June 26, 2007.

Brandeis-Harvard-MIT-Northeastern Joint Mathematics Colloquium (at Harvard University): “Reed-Solomon codes, low-degree automorphisms, and error-correction with optimal rate,” April 26, 2007.

Princeton University, Theory lunch seminar: “List decoding with optimal data rate,” March 16, 2007.

Rutgers University, DIMACS Theoretical Computer Science Seminar: “Lossless Expanders and Randomness Extractors from Parvaresh-Vardy Codes,” February 21, 2007.

University of California at San Diego, Information Theory and Applications Workshop: “Hardness results for agnostic learning,” February 1, 2007.

Google, New York: “Hardness results for learning with noise,” January 3, 2007.

Institute of Mathematical Sciences, Chennai, India: “List Decoding with Optimal Rate: Folded Reed-Solomon Codes,” December 27, 2006.

Post FST&TCS 2006 Workshop on Recent Advances in Approximation Algorithms, Kolkata, India: “Inapproximability results for learning with noise,” December 16, 2006.

Georgia Institute of Technology, Theory of Computation Colloquium: “List decoding with optimal rate: Folded Reed-Solomon codes,” November 6, 2006.

44th Annual Allerton Conference on Communication, Control, and Computing, Monticello, IL: “Achieving List Decoding Capacity using Folded Reed-Solomon codes,” September 28, 2006.

Workshop on Codes and Lattices in Cryptography (CLC 2006), Darmstadt, Germany: “List decoding interleaved and folded Reed-Solomon codes,” September 26, 2006.

ETH Zurich, Mittagsseminar: “Error-correction when Noise Overwhelms Correct Data,” September 21, 2006.

Packard Fellows Meeting, Monterey, CA: “Error-correction when noise overwhelms correct data,” September 7, 2006.

Banff International Research Station Workshop on Recent Advances in Complexity Theory: “List decoding with optimal rate: Folded Reed-Solomon Codes,” August 30, 2006.

SIAM Conference on Discrete Mathematics, Victoria, BC: “List Decoding with Optimal Rate – Achieving Capacity for Adversarial Noise,” June 28, 2006.

University of Melbourne, Joint Computer Science & Software Engineering and Electrical & Electronic Engineering seminar: “List Decoding: Achieving Capacity Against Malicious Errors,” June 9, 2006.

University of Ballarat: “List Decoding: Achieving Capacity Against Malicious Errors,” June 6, 2006.

Macquarie University: “List Decoding: Achieving Capacity Against Malicious Errors,” June 2, 2006.

Microsoft Research Silicon Valley, Mountain View, CA: “Achieving Channel Capacity Against Malicious Errors,” April 28, 2006.

Stanford University, Joint Information Systems Lab (ISL) and Theory seminar: “Achieving Channel Capacity Against Malicious Errors,” April 27, 2006.

University of California, Berkeley; Joint talk in Networking, Communications, and DSP Seminar, and the Theory Seminar: “Capacity-Achieving List-Decodable Codes for Worst-Case Errors,” April 24, 2006.

Toyota Technological Institute, University of Chicago: “List Decoding: What, Why and How?” April 13, 2006.

MIT Theory Colloquium: “Capacity-Achieving List-Decodable Codes for Worst-Case Errors,” April 11, 2006.

IEEE Information Theory Workshop, Punta del Este, Uruguay: “List Decoding in Average-case complexity and Pseudorandomness,” March 2006.

Portland State University, Computer Science Colloquium: “List Decoding: Algorithms and Applications,” February 27, 2006.

New York University: “List Decoding: Context, Constructions, Connections, and Challenges,” September 16, 2005.

University of Washington: “List Decoding: Context, Constructions, Connections, and Challenges,” November 16, 2004.

Oberwolfach Complexity theory meeting, Mathematisches Forschungsinstitut Oberwolfach: Invited participant, June 2005.

Beckman Frontiers of Science Symposium, National Academy of Sciences, Arnold and Mabel Beckman Center, Irvine, CA: Invited participant, November 2004.

Banff International Research Station workshop on Advances in Complexity Theory: “The complexity of the covering radius problem,” July 2004.

University of California, San Diego: “Clustering with Qualitative Information,” February 26, 2004.

California Institute of Technology: “Clustering with Qualitative Information,” February 24, 2004.

University of Southern California, Los Angeles: “List Decoding: Recent Progress and Challenges Ahead,” November 8, 2004.

First Pacific Northwest Theory day, Microsoft Research, Redmond, WA: “List Decoding: Recent Progress and Challenges Ahead,” May 1, 2004.

Oberwolfach Coding theory meeting, Mathematisches Forschungsinstitut Oberwolfach: Invited lecture on “List Decoding: Recent Progress and Challenges Ahead,” December 2003.

41st Annual Allerton Conference on Communication, Control and Computing, Monticello, IL: “Efficiently Decodable codes meeting Gilbert-Varshamov bound for low rates,” October 2003.

Tata Institute for Fundamental Research, Mumbai: “Expanders: A powerful tool for code constructions,” July 2003.

Oberwolfach Complexity theory meeting, Mathematisches Forschungsinstitut Oberwolfach: Invited lecture on “List decoding using side information,” April 27-May 3, 2003.

Princeton University: “Expanders: A powerful weapon for code constructions,” March 28, 2003.

Columbia University: “Expanders: A powerful weapon for code constructions,” March 27, 2003.

Microsoft Research, Redmond, WA: “Expanders: A powerful weapon for code constructions,” February 7, 2003.

University of Washington: “Expanders: A powerful weapon for code constructions,” January 21, 2003.

New York Theory Day, New York University: “Linear Time Encodable/Decodable Codes with Near-optimal Rate,” April 19, 2002.

Princeton University: “Linear Time Encodable/Decodable Codes with Near-optimal Rate,” April 16, 2002.

Carnegie Mellon University “Linear Time Encodable/Decodable Codes with Near-optimal Rate,” April 12, 2002.

University of Washington: “Linear Time Encodable/Decodable Codes with Near-optimal Rate,” April 4, 2002.

39th Annual Allerton Conference on Communication, Control and Computing, Monticello, IL: “Linear time codes to correct a maximum possible fraction of errors,” October 4, 2001.

Stanford University: “List Decoding of Error-correcting Codes,” April 2001.

Georgia Institute of Technology: “List Decoding of Error-correcting Codes,” April 2001.

University of Toronto: “List Decoding of Error-correcting Codes,” April 2001.

Workshop on Asymptotic and Computational Aspects of Coding Theory, Institute for Advanced Study, Princeton: “Combinatorial Bounds for List Decoding,” March 2001.

Brown University: “List Decoding of Error-correcting Codes,” March 2001.

Cornell University: “List Decoding of Error-correcting Codes,” March 2001.

Carnegie Mellon University: “List Decoding of Error-correcting Codes,” March 2001.

AT&T Shannon Labs: “List Decoding of Error-correcting Codes,” March 2001.

University of Washington: “List Decoding of Error-correcting Codes,” February 2001.

University of Pennsylvania: “List Decoding of Error-correcting Codes,” February 2001.

IBM Almaden Research Center: “List Decoding of Error-correcting Codes,” February 2001.

IBM T.J Watson Research Center, Yorktown Heights, NY: “Hardness of Approximate Hypergraph Coloring,” December 2000.

University of Washington: “Hardness of Approximate Hypergraph Coloring,” November 2000.

Massachusetts Institute of Technology: “Hardness of Approximate Hypergraph Coloring,” November 2000.

38th Annual Allerton Conference on Communication, Control and Computing, Monticello, IL: “Combinatorial Bounds for List Decoding,” October 2000.

MIT (Complexity Seminar); two part 3 hour tutorial: “List Decoding of Error-correcting Codes,” September 2000.

IBM Almaden Research Center: “Hardness of 4-coloring a 3-colorable Graph,” June 2000.

Workshop on Discrete and Combinatorial Optimization, Bonn, Germany: “List Decoding of Reed-Solomon Codes and Related Combinatorial Questions,” Sept 28-Oct 2, 1998.

Bell Labs, Lucent Technologies: “Improved Decoding of Reed-Solomon and Algebraic-Geometric Codes,” June 1998.

AT&T Labs Research (now AT&T Shannon Labs): “Improved Decoding of Reed-Solomon and Algebraic-Geometric Codes,” July 1998.

Workshop on Interactive Proofs, PCPs, and Fundamentals of Cryptography (Toronto, Canada): “A Tight Characterization of NP by 3-query PCPs,” May 1998.

9 Publications

9.1 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).

9.2 Refereed Journal Publications

Accepted papers

- [J1] V. Guruswami, J. Lee, and A. Razborov. Almost Euclidean sections of ℓ_1^n via expander codes. *Combinatorica*, 2009. Accepted for publication.
- [J2] V. Guruswami and P. Raghavendra. Hardness of solving sparse overdetermined linear systems: A 3-query PCP over integers. *ACM Transactions on Computation Theory*, 2009. Accepted for publication.
- [J3] V. Guruswami and P. Raghavendra. Hardness of learning halfspaces with noise. *SIAM Journal on Computing*, 2009. Accepted for publication.
- [J4] 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*, 2009. Accepted for publication.

Published papers

- [J5] V. Guruswami, C. Umans, and S. Vadhan. Unbalanced expanders and randomness extractors from Parvaresh-Vardy codes. *Journal of the ACM*, 56(4), 2009.
- [J6] 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.
- [J7] V. Guruswami and A. Rudra. Better binary list-decodable codes via multilevel concatenation. *IEEE Transactions on Information Theory*, 55(1):19–26, January 2009.

- [J8] V. Guruswami and V. Kabanets. Hardness amplification via space-efficient direct products. *Computational Complexity*, 17(4):475–500, December 2008.
- [J9] 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.
- [J10] V. Guruswami and A. Patthak. Correlated Algebraic-Geometric codes: Improved list decoding over bounded alphabets. *Mathematics of Computation*, 77(261):447–473, January 2008.
- [J11] P. Gopalan, V. Guruswami, and R. Lipton. Algorithms for modular counting of roots of multivariate polynomials. *Algorithmica*, 50(4):479–496, 2008.
- [J12] 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.
- [J13] I. Giotis and V. Guruswami. Correlation clustering with a fixed number of clusters. *Theory of Computing*, 2(13):249–266, 2006.
- [J14] V. Guruswami and A. Rudra. Limits to list decoding Reed-Solomon codes. *IEEE Transactions on Information Theory*, 52(8):3642–3649, August 2006.
- [J15] 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.
- [J16] 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.
- [J17] 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.
- [J18] 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).
- [J19] I. Dinur, V. Guruswami, S. Khot, and O. Regev. A new multilayered PCP and the hardness of hypergraph vertex cover. *SIAM Journal on Computing*, 34(5):1129–1146, 2005.
- [J20] V. Guruswami and S. Khanna. On the hardness of 4-coloring a 3-colorable graph. *SIAM Journal on Discrete Mathematics*, 18(1):30–40, 2004.
- [J21] L. Engebretsen and V. Guruswami. Is constraint satisfaction over two variables always easy? *Random Structures and Algorithms*, 25(2):150–178, September 2004.
- [J22] M. Guruswamy, V. Guruswami, and C. S. R. Murthy. Randomized routing and wavelength requirements in wavelength routed WDM multistage, hypercube, and de bruijn networks. *Journal of Parallel and Distributed Computing*, 64:385–399, 2004.
- [J23] V. Guruswami. List decoding from erasures: Bounds and code constructions. *IEEE Transactions on Information Theory*, 49(11):2826–2833, 2003.
- [J24] V. Guruswami. Inapproximability results for set splitting and satisfiability problems with no mixed clauses. *Algorithmica*, 38(3):451–469, December 2003.
- [J25] V. Guruswami, S. Khanna, R. Rajaraman, F. B. Shepherd, and M. Yannakakis. Near-optimal hardness results and approximation algorithms for edge-disjoint paths and related problems. *J. Comput. Syst. Sci.*, 67(3):473–496, 2003.

- [J26] V. Guruswami. Constructions of codes from number fields. *IEEE Transactions on Information Theory*, 49(3):594–603, 2003.
- [J27] V. Guruswami, J. Håstad, and M. Sudan. Hardness of approximate hypergraph coloring. *SIAM Journal on Computing*, 31(6):1663–1686, 2002.
- [J28] M. Charikar, R. Fagin, V. Guruswami, J. M. Kleinberg, P. Raghavan, and A. Sahai. Query strategies for priced information. *J. Comput. Syst. Sci.*, 64(4):785–819, 2002.
- [J29] V. Guruswami, C. P. Rangan, M. Chang, G. J. Chang, and C. K. Wong. The K_r -packing problem. *Computing*, 66(1):79–89, 2001.
- [J30] V. Guruswami, J. Håstad, M. Sudan, and D. Zuckerman. Combinatorial bounds for list decoding. *IEEE Transactions on Information Theory*, 48(5):1021–1035, 2002.
- [J31] V. Guruswami and M. Sudan. On representations of Algebraic-geometric codes for list decoding. *IEEE Transactions on Information Theory*, 47(4):1610–1613, 2001.
- [J32] V. Guruswami and C. P. Rangan. Algorithmic aspects of clique-transversal and clique-independent sets. *Discrete Applied Mathematics*, 100(3):183–202, 2000.
- [J33] V. Guruswami and M. Sudan. Improved decoding of Reed-Solomon and Algebraic-geometric codes. *IEEE Transactions on Information Theory*, 45(6):1757–1767, 1999.
- [J34] V. Guruswami. Enumerative aspects of certain classes of perfect graphs. *Discrete Mathematics*, 205:97–117, 1999.
- [J35] V. Guruswami. Maximum cut on line and total graphs. *Discrete Applied Mathematics*, 92:217–221, 1999.
- [J36] V. Guruswami and C. P. Rangan. A natural family of optimization problems with arbitrarily small approximation thresholds. *Information Processing Letters*, 68(5):241–248, 1998.
- [J37] V. Guruswami, U. Rotics, M. S. Madanlal, J. Makowsky, and C. P. Rangan. Restrictions of minimum spanner problems. *Information and Computation*, 136(2):143–164, 1997.
- [J38] M. S. Madanlal, V. Guruswami, and C. P. Rangan. Tree 3-spanners on interval, permutation, and regular bipartite graphs. *Information Processing Letters*, 59:97–102, 1996.

9.3 Papers in refereed conferences

- [C1] V. Feldman, V. Guruswami, P. Raghavendra, and Y. Wu. Agnostic learning of monomials by halfspaces is hard. In *Proceedings of the 50th IEEE Symposium on Foundations of Computer Science*, October 2009.
- [C2] V. Guruswami and A. K. Sinop. Improved inapproximability results for maximum k-colorable subgraph. In *Proceedings of the 12th International Workshop on Approximation, Randomization, and Combinatorial Optimization: Algorithms and Techniques (APPROX)*, pages 163–176, 2009.
- [C3] M. Charikar, V. Guruswami, and R. Manokaran. Every permutation CSP of arity 3 is approximation resistant. In *Proceedings of the 24th IEEE Conference on Computational Complexity*, July 2009.
- [C4] E. Ben-Sasson, V. Guruswami, T. Kaufman, M. Sudan, and M. Viderman. Locally testable codes require redundant testers. In *Proceedings of the 24th IEEE Conference on Computational Complexity*, July 2009.

- [C5] V. Guruswami. Artin automorphisms, cyclotomic function fields, and folded list-decodable codes. In *Proceedings of the 41st ACM Symposium on Theory of Computing (STOC)*, pages 23–32, May-June 2009.
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9.4 Invited papers and surveys (non-refereed)

- [I1] V. Guruswami, J. Lee, and A. Wigderson. Expander codes over reals, Euclidean sections, and compressed sensing. In *Proceedings of the 47th Annual Allerton Conference on Communication, Control, and Computing*, October 2009.
- [I2] 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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- [I6] V. Guruswami. List Decoding in Pseudorandomness and Average-case Complexity. In *Proceedings of the IEEE Information Theory Workshop*, pages 32–36, March 2006. Invited mini-survey.
- [I7] V. Guruswami. Error-correcting codes and expander graphs. *SIGACT News*, 35(3):25–41, September 2004.
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9.5 Papers in submission

- [M1] V. Guruswami and A. Smith. Explicit capacity-achieving codes against worst-case additive errors. Manuscript, October 2009.
- [M2] V. Guruswami and Y. Zhou. Tight inapproximability bounds for almost-satisfiable Horn-Sat and exact hitting set. Manuscript, November 2009.
- [M3] V. Guruswami, J. Håstad, and S. Kopparty. On the list-decodability of random linear codes. Manuscript, November 2009.