

**Irit Dinur**  
**Curriculum Vitae**  
idinur@ias.edu  
(609)734-8149

## EDUCATION

---

2003-2004 Post-Doc, Miller fellow at UC Berkeley.  
2002-2003 Post-Doc, NEC Research Institute, Princeton.  
2001-2002 Post-Doc Member, School of Mathematics, Institute for Advanced Study, Princeton.  
2001 **Ph.D.**, *Summa Cum Laude*, awarded on June 2002, Computer Science, Tel Aviv University, Israel  
Thesis title: "On the Hardness of Approximating the Minimum Vertex Cover and the Closest Vector in a Lattice". Research supervised by Prof. Shmuel Safra.  
1995 **B.Sc.**, Mathematics and Computer Science, Tel Aviv University, Israel, (*Summa Cum Laude*).

## ACADEMIC POSITIONS

---

2024– Full Professor, incumbent of the Overdeck Professorial Chair, Institute for Advanced Study, Princeton.  
2019–2020 Visiting Professor, Institute for Advanced Study, Princeton.  
2013–2024 Full Professor, Weizmann Institute of Science, incumbent of the Dr. Hymie Moross Professorial Chair.  
2012-2013 Visiting Fellow, the Radcliffe Institute at Harvard.  
2011-2012 Visiting Researcher, Microsoft New England Research Lab.  
2007–2013 Associate Professor, Weizmann Institute of Science.  
2004–2007 Senior lecturer, incumbent of the Harry and Abe Sherman lectureship chair, Hebrew University.

## RESEARCH INTERESTS

---

Theoretical computer science and computational complexity. Specifically, robustness in computation, probabilistically checkable proofs (PCPs), and hardness of approximation. Recently, local to global phenomena and especially high dimensional expansion, property testing, error-correcting codes, and analysis of Boolean functions.

## AWARDS AND HONORS

---

- 2024 Information Theory Society Paper Award.
- 2023 Best Paper Award in Theoretical Computer and Information Sciences (Beijing) for the paper "Locally Testable Codes with constant rate, distance, and locality", with Evra, Livne, Lubotzky, and Mozes.
- 2022 STOC best paper award, for the paper "Locally Testable Codes with constant rate, distance, and locality", with Evra, Livne, Lubotzky, and Mozes.
- 2022 ACM Paris Kanellakis Theory and Practice Award.
- 2021 Kimmel Award.
- 2019 Gödel prize (awarded by EATCS and ACM SIGACT).
- 2015 Prof. Pazy Memorial Research Award (awarded by the BSF).
- 2014 Levinson Award (awarded by Weizmann).
- 2013 Test of time award (TOTA), PODS, together with Kobbi Nissim for our paper 'Revealing Information While Preserving Privacy'.
- 2012 Erdős Prize, Israel Math Union.
- 2007 Yad Hanadiv Bruno Research Award.
- 2006 Best paper award, the 38th ACM Symposium on Theory of Computing (STOC).
- 2006 The Hebrew University Rector Prize.
- 2005 Bergmann Memorial BSF Award.
- 2002 Haim Nessler Prize for excellent PhD thesis in mathematics in Israel.

## FUNDING

---

- ERC advanced grant no. 101142769 (2,105,940 Euros). Period: 01/2025-12/2030, "Local to global expansion and PCPs".
- ISF grant no. 2073/21 (920,000 ILS). Period: 10/2021-09/2025, "Expanders and Codes".
- ERC consolidator grant no. 772839 (1,512,035 Euros). Period: 02/2018-12/2024, "High Dimensional Expanders and Probabilistically Checkable Proofs".
- Previous grants: BSF 2015-2019, ISF-UGC 2014-2017, ERC-starting-grant 2009-2016, BSF 2009-2013, ISF 2009-2013, BSF 2005-2009, ISF 2004-2008.

## SELECTED TALKS

---

- 2025 (planned Oct 2023) Distinguished lecture series at TTI Chicago
- 2025 Harvard CMSA Ding-Shum lecture.
- 2022 “inspirational talk” at STOC 2022 TCS women’s highlight workshop, see <https://sigact.org/tcswomen/>.
- 2022 Plenary lecture at FSTTCS conference, Chennai.
- 2022 Masaryk University lecture series.
- 2022 MATH+ colloquium in Berlin.
- 2021 Breakthroughs in Computer Science talk series, Simons Institute.
- 2020 Hermann Weyl Lectures at the Institute for Advanced Study, Princeton.
- 2019 Plenary talk at SODA conference.
- 2018 Plenary lecture at British Mathematics Colloquium, at St. Andrews, Scotland.
- 2017 Colloquium lecture at IST Austria.
- 2016 ETH Zurich Distinguished Computer Science Colloquium.
- 2016 Math across campus (MAC) plenary lecture, U Washington.
- 2010 Plenary talk, International Congress of Mathematicians (ICM), Hyderabad.

## Recent mini-courses and schools

- 2023 CSCIT summer school, course on expanders and codes (Hong Kong University).
- 2023 Oleron summer school on complexity, mini-course on hardness of approximation.
- 2021 UNCG Expander Summer School, mini-course (virtual).

## CONFERENCE ORGANIZATION

---

### Future programs and workshops

- Semester program at the Simons Institute at UC Berkeley (“Pseudorandomness and high dimensional expansion”), planned 2027/8, lead co-organizer with Salil Vadhan.
- Oberwolfach meeting on computational complexity, co-organized with Peter Bürgisser and Salil Vadhan (June 2024).

### Past events

- ICTS Workshop in Bangalore “HDX and Codes”, 2025, co-organized with Prahladh Harsha and Venkatesan Guruswami.
- 2025 Weizmann winter school on expansion in groups, combinatorics, and complexity, co-organized with Thomas Vidick.
- Simons summer semester 2023: “Beyond the Boolean cube” (co-organizer)
- Oberwolfach meeting on computational complexity, co-organizer (2021, 2018)
- Simons 2019 Summer Cluster on “Codes and high dimensional expanders” (lead organizer)
- ICM 2018 Program Committee
- Weizmann summer workshop on high dimensional expanders, 2016
- ITCS 2015, conference local organizer
- Winter School in and about combinatorics (IAS in Jerusalem, 2015)
- ICM Sectional Program Committee, (2014, 2010)
- Discrete Harmonic Analysis (Newton Institute in Cambridge UK) 2011, Quantitative Geometry in Computer Science (MSRI)
- Workshop on Analytical methods in combinatorics and CS (2009), IPAM
- Women in Theory workshop, Princeton, (2008).

## EDITORIAL SERVICE

---

- Editor: Journal of the ACM (2016-2023), Journal of Computational Complexity (2019-2024).
- Scientific Advisory Boards: Mathematical Research Institute Oberwolfach SAB 2024-2028, Simons Institute SAB 2018-2020, ECCC - The Electronic Colloquium on Computational Complexity.
- Conference program committees: STOC 2024, CCC 2019, FOCS 2016 (chair), FOCS 2015, STOC 2013, CCC 2012, STOC 2010, LATIN 2010, RANDOM 2009 (chair), RANDOM 2007, FOCS 2005, CCC 2005, STOC 2004.

## PUBLICATIONS

---

- [1] Irit Dinur, Siqu Liu, and Rachel Zhang. New codes on high dimensional expanders. In *CCC*, 2025.
- [2] Yotam Dikstein, Irit Dinur, and Alexander Lubotzky. Low acceptance agreement tests via bounded-degree symplectic HDXs. (submitted, arXiv:2402.01078), 2024.
- [3] Irit Dinur, Ting-Chun Lin, and Thomas Vidick. Expansion of higher-dimensional cubical complexes with application to quantum locally testable codes. (submitted, arXiv:2402.07476), 2024.
- [4] Ron Asherov and Irit Dinur. Bipartite unique-neighbour expanders via Ramanujan graphs. *Entropy journal*, Special issue on extremal and additive combinatorics (to appear), 2024.
- [5] Yotam Dikstein and Irit Dinur. Agreement theorems for high dimensional expanders in the small soundness regime: the role of covers. In *STOC*, 2024.
- [6] Yotam Dikstein and Irit Dinur. Swap cosystolic expansion. In *STOC*, 2024.
- [7] Yotam Dikstein, Irit Dinur, Yuval Filmus, and Prahladh Harsha. Boolean function analysis on high-dimensional expanders. *Combinatorica*, 2024.
- [8] Irit Dinur, Min Hsiu Hsieh, Ting Chun Lin, and Thomas Vidick. Good quantum LDPC codes with linear time decoders. In *STOC 2023 - Proceedings of the 55th Annual ACM Symposium on Theory of Computing*, pages 905–918. Association for Computing Machinery, June 2023.
- [9] Yotam Dikstein, Irit Dinur, and Shiri Sivan. The linear time encoding scheme fails to encode. (submitted, arxiv:2312.16125), 2023.
- [10] Yotam Dikstein and Irit Dinur. Coboundary and cosystolic expansion without dependence on dimension or degree. (manuscript, arXiv:2304.01608), 2023.
- [11] Irit Dinur and Inbal Livni Navon. Exponentially small soundness for the direct product Z-test. *Theory of Computing*, 19, October 2023.
- [12] Irit Dinur, Prahladh Harsha, Tali Kaufman, and Noga Ron-Zewi. From local to robust testing via agreement testing. *Theory of Computing*, 18, June 2022.
- [13] Irit Dinur and Roy Meshulam. Near coverings and cosystolic expansion. *Archiv der Mathematik*, 118(5):549–561, May 2022.
- [14] Nataly Brukhim, Daniel Carmon, Irit Dinur, Shay Moran, and Amir Yehudayoff. A characterization of multiclass learnability. In *2022 IEEE 63rd Annual Symposium on Foundations of Computer Science (FOCS)*, pages 943–955, December 2022.
- [15] Irit Dinur, Shai Evra, Ron Livne, Alexander Lubotzky, and Shahar Mozes. Locally testable codes with constant rate, distance, and locality. In Stefano Leonardi and Anupam Gupta, editors, *STOC '22: 54th Annual ACM SIGACT Symposium on Theory of Computing, Rome, Italy, June 20 - 24, 2022*, pages 357–374. ACM, 2022.
- [16] Irit Dinur, Prahladh Harsha, Tali Kaufman, Inbal Livni Navon, and Amnon Ta-Shma. List-decoding with double samplers. *SIAM J. Comput.*, 50(2):301–349, 2021.
- [17] Irit Dinur, Yuval Filmus, Prahladh Harsha, and Madhur Tulsiani. Explicit SoS lower bounds from high-dimensional expanders. In James R. Lee, editor, *12th Innovations in Theoretical Computer Science Conference, ITCS 2021, January 6-8, 2021, Virtual Conference*, volume 185 of *LIPIcs*, pages 38:1–38:16. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2021.
- [18] Irit Dinur, Subhash Khot, Guy Kindler, Dor Minzer, and Muli Safra. On non-optimally expanding sets in grassmann graphs. *Israel Journal of Mathematics*, 243(1):377–420, June 2021.
- [19] Irit Dinur, Prahladh Harsha, Tali Kaufman, Inbal Livni Navon, and Amnon Ta-Shma. List-decoding with double samplers. *SIAM Journal on Computing*, 50(2):301–349, March 2021.
- [20] Yotam Dikstein and Irit Dinur. Agreement testing theorems on layered set systems. In *60th IEEE Annual Symposium on Foundations of Computer Science, FOCS 2019, Baltimore, Maryland, USA, November 9-12, 2019*, pages 1495–1524. IEEE Computer Society, 2019.
- [21] Irit Dinur, Prahladh Harsha, Tali Kaufman, and Noga Ron-Zewi. From local to robust testing via agreement testing. In *10th Innovations in Theoretical Computer Science Conference, ITCS 2019, January 10-12, 2019, San Diego, California, USA*, volume 124 of *LIPIcs*, pages 29:1–29:18. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2019.

- [22] Irit Dinur and Konstantin Golubev. Direct sum testing: the general case. In *RANDOM*, 2019.
- [23] Irit Dinur, Oded Goldreich, and Tom Gur. Every set in  $\mathcal{P}$  is strongly testable under a suitable encoding. In *ITCS*, 2019.
- [24] Irit Dinur, Yuval Filmus, and Prahladh Harsha. Agreement tests on graphs and hypergraphs. *SICOMP*, 2024. To appear. Preliminary version appeared in SODA 2019.
- [25] Irit Dinur, Subhash Khot, Guy Kindler, Dor Minzer, and Muli Safra. Towards a proof of the 2-to-1 games conjecture? In *Proceedings of the 50th Annual ACM SIGACT Symposium on Theory of Computing, STOC 2018, Los Angeles, CA, USA, June 25-29, 2018*, pages 376–389. ACM, 2018.
- [26] Irit Dinur and Pasin Manurangsi. ETH-hardness of approximating 2-CSPs and directed steiner network. In *9th Innovations in Theoretical Computer Science Conference, ITCS 2018, January 11-14, 2018, Cambridge, MA, USA*, volume 94 of *LIPIcs*, pages 36:1–36:20. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2018.
- [27] Irit Dinur and Tali Kaufman. High dimensional expanders imply agreement expanders. In *58th IEEE Annual Symposium on Foundations of Computer Science, FOCS 2017, Berkeley, CA, USA, October 15-17, 2017*, pages 974–985. IEEE Computer Society, 2017.
- [28] Amey Bhangale, Irit Dinur, and Inbal Livni Navon. Cube vs. cube low degree test. In *8th Innovations in Theoretical Computer Science Conference, ITCS 2017, January 9-11, 2017, Berkeley, CA, USA*, volume 67 of *LIPIcs*, pages 40:1–40:31. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2017.
- [29] Irit Dinur, Prahladh Harsha, Rakesh Venkat, and Henry Yuen. Multiplayer parallel repetition for expanding games. In *8th Innovations in Theoretical Computer Science Conference, ITCS 2017, January 9-11, 2017, Berkeley, CA, USA*, volume 67 of *LIPIcs*, pages 37:1–37:16. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2017.
- [30] Roei David, Irit Dinur, Elazar Goldenberg, Guy Kindler, and Igor Shinkar. Direct sum testing. *SIAM J. Comput.*, 46(4):1336–1369, 2017.
- [31] Irit Dinur and Or Meir. Toward the KRW composition conjecture: Cubic formula lower bounds via communication complexity. In *31st Conference on Computational Complexity, CCC 2016, May 29 to June 1, 2016, Tokyo, Japan*, volume 50 of *LIPIcs*, pages 3:1–3:51. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2016.
- [32] Irit Dinur. Mildly exponential reduction from gap-3SAT to polynomial-gap label-cover. (manuscript, ECCC TR16-128), 2016.
- [33] Irit Dinur, Prahladh Harsha, and Guy Kindler. Polynomially low error PCPs with polyloglog  $n$  queries via modular composition. In *Proceedings of the Forty-Seventh Annual ACM on Symposium on Theory of Computing, STOC 2015, Portland, OR, USA, June 14-17, 2015*, pages 267–276. ACM, 2015.
- [34] Irit Dinur, Prahladh Harsha, Srikanth Srinivasan, and Girish Varma. Derandomized graph product results using the low degree long code. In *32nd International Symposium on Theoretical Aspects of Computer Science, STACS 2015, March 4-7, 2015, Garching, Germany*, volume 30 of *LIPIcs*, pages 275–287. Schloss Dagstuhl - Leibniz-Zentrum für Informatik, 2015.
- [35] Irit Dinur, Shafi Goldwasser, and Huijia Lin. The computational benefit of correlated instances. In *Proceedings of the 2015 Conference on Innovations in Theoretical Computer Science, ITCS 2015, Rehovot, Israel, January 11-13, 2015*, pages 219–228. ACM, 2015.
- [36] Irit Dinur, David Steurer, and Thomas Vidick. A parallel repetition theorem for entangled projection games. *Comput. Complex.*, 24(2):201–254, 2015.
- [37] Irit Dinur and David Steurer. Analytical approach to parallel repetition. In *Symposium on Theory of Computing, STOC 2014, New York, NY, USA, May 31 - June 03, 2014*, pages 624–633, 2014.
- [38] Irit Dinur and David Steurer. Direct product testing. In *IEEE 29th Conference on Computational Complexity, CCC 2014, Vancouver, BC, Canada, June 11-13, 2014*, pages 188–196, 2014.
- [39] Irit Dinur and Venkatesan Guruswami. PCPs via low-degree long code and hardness for constrained hypergraph coloring. In *FOCS*, 2013.
- [40] Irit Dinur and Elazar Goldenberg. Clustering in the boolean hypercube in a list decoding regime. In *ICALP (1)*, pages 413–424, 2013.
- [41] Irit Dinur and Gillat Kol. Covering CSPs. In *CCC*, 2013.

- [42] Irit Dinur and Prahladh Harsha. Composition of low-error 2-query PCPs using decodable PCPs. *SIAM J. Comput.*, 42(6):2452–2486, 2013.
- [43] Irit Dinur and Tali Kaufman. Locally testable codes and expanders. (manuscript), 2012.
- [44] Irit Dinur and Tali Kaufman. Dense locally testable codes cannot have constant rate and distance. In *APPROX-RANDOM*, pages 507–518, 2011.
- [45] Irit Dinur and Or Meir. Derandomized parallel repetition via structured PCPs. *Computational Complexity*, 20(2):207–327, 2011.
- [46] Irit Dinur, Eldar Fischer, Guy Kindler, Ran Raz, and Shmuel Safra. PCP characterizations of NP: Toward a polynomially-small error-probability. *Computational Complexity*, 20(3):413–504, 2011.
- [47] Irit Dinur and Igor Shinkar. On the conditional hardness of coloring a 4-colorable graph with super-constant number of colors. In *APPROX-RANDOM*, pages 138–151, 2010.
- [48] Irit Dinur and Elazar Goldenberg. The structure of winning strategies in parallel repetition games. In *APPROX-RANDOM*, pages 518–530, 2010.
- [49] Irit Dinur, Subhash Khot, Will Perkins, and Muli Safra. Hardness of finding independent sets in almost 3-colorable graphs. In *FOCS*, pages 212–221, 2010.
- [50] Irit Dinur. Probabilistically checkable proofs (survey and talk). In *International Congress of Mathematics*, 2010.
- [51] Irit Dinur and Ehud Friedgut. Intersecting families are essentially contained in juntas. *Combinatorics, Probability & Computing*, 18(1-2):107–122, 2009.
- [52] Irit Dinur, Elchanan Mossel, and Oded Regev. Conditional hardness for approximate coloring. *SIAM J. Comput.*, 39(3):843–873, 2009.
- [53] Irit Dinur, Ehud Friedgut, and Oded Regev. Independent sets in graph powers are almost contained in juntas. *Geometric and Functional Analysis*, 18(1):77–97, 2008.
- [54] Irit Dinur. Guest complexity theory column: PCPs with small soundness error. *ACM SIGACT News*, 2008.
- [55] Irit Dinur, Elena Grigorescu, Swastik Kopparty, and Madhu Sudan. Decodability of group homomorphisms beyond the Johnson bound. In *Proc. 40th ACM Symp. on Theory of Computing*, pages 275–284, 2008.
- [56] Irit Dinur. The PCP theorem by gap amplification. *J. of ACM*, 54(3), 2007.
- [57] Irit Dinur, Ehud Friedgut, Guy Kindler, and Ryan O’Donnell. On the fourier tails of bounded functions over the discrete cube. *Israel Journal of Mathematics*, 160(1):389–412, 2007.
- [58] Irit Dinur, Madhu Sudan, and Avi Wigderson. Robust local testability of tensor products of LDPC codes. In *Proc. 10th International Workshop on Randomization and Computation (RANDOM)*, 2006.
- [59] Irit Dinur and Ehud Friedgut. Proof of an intersection theorem via graph homomorphisms. *Electronic Journal on Combinatorics*, 13(1), 2006.
- [60] Irit Dinur and Omer Reingold. Assignment testers: Towards a combinatorial proof of the PCP theorem. *SIAM J. Comput.*, 36(4):975–1024, 2006.
- [61] Irit Dinur, Oded Regev, and Clifford D. Smyth. The hardness of 3-Uniform hypergraph coloring. *Combinatorica*, 25(1):519–535, 2005.
- [62] Irit Dinur, Venkatesan Guruswami, Subhash Khot, and Oded Regev. A new multilayered PCP and the hardness of hypergraph vertex cover. *SIAM Journal on Computing*, 34(5):1129–1146, 2005.
- [63] Irit Dinur and Shmuel Safra. On the hardness of approximating minimum vertex cover. *Annals of Mathematics*, 162(1):439–485, 2005.
- [64] Noga Alon, Irit Dinur, Ehud Friedgut, and Benjamin Sudakov. Graph products, Fourier analysis and spectral techniques. *GAF*, 14(5):913–940, 2004.
- [65] Irit Dinur and Shmuel Safra. On the hardness of approximating Label-Cover. *Information Processing Letters*, 89(5):247–254, 2004.

- [66] Irit Dinur and Kobbi Nissim. Revealing information while preserving privacy. In *Proceedings of the 22nd ACM SIGMOD-SIGACT-SIGART Symposium on Principles of Database Systems (PODS)*, pages 202–210, 2003.
- [67] Irit Dinur, Guy Kindler, Ran Raz, and Shmuel Safra. Approximating CVP to within almost-polynomial factors is NP-hard. *Combinatorica*, 23(2):205–243, 2003.
- [68] Irit Dinur. Approximating  $SVP_{\infty}$  to within almost-polynomial factors is NP-hard. *Theoretical Computer Science*, 285(1):55–71, 2002.