

## Curriculum Vitae - Avishay Tal

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<b>RESEARCH INTERESTS</b>	Computational Complexity, Analysis of Boolean Functions, Circuit Complexity, Formula Complexity, Decision Tree Complexity, Pseudorandomness, Learning, and the Connections between Algorithms and Lower Bounds.	
<b>EDUCATION</b>	<b>Ph.D. in Computer Science</b> <i>The Weizmann Institute of Science, Rehovot, Israel</i> Dissertation title: Analysis of Boolean Functions in Theoretical Computer Science. Advisor: Prof. Ran Raz	2012-2015
	<b>M.Sc. (summa cum laude) in Computer Science</b> <i>The Technion, Haifa, Israel</i> Thesis: On the Minimal Fourier Degree of Symmetric Boolean Functions Advisor: Prof. Amir Shpilka	2007-2012
	<b>B.Sc. (summa cum laude) in Software Engineering</b> <b>B.A. (summa cum laude) in Mathematics</b> <i>The Technion, Haifa, Israel</i>	2001-2005 2001-2007
<b>EXPERIENCE</b>	<b>Motwani Postdoctoral Fellow</b> <i>Stanford University, Stanford, CA.</i> <i>Hosted by Prof. Omer Reingold.</i>	2017-current
	<b>Postdoctoral Researcher</b> <i>Institute for Advanced Study, Princeton, NJ.</i> <i>Simons Collaboration on Algorithms and Geometry.</i> <i>Hosted by Prof. Avi Wigderson.</i>	2015-2017
	<b>Algorithmic Research Officer &amp; Team Leader</b> <i>IDF</i>	2005-2012
	<b>Teaching Assistant for <i>Digital Systems</i></b> <i>The Technion, Haifa, Israel.</i>	2005
	<b>Teaching Assistant for <i>Introduction to Computer Science</i></b> <i>The Technion, Haifa, Israel.</i>	2003-2004
<b>AWARDS &amp; HONORS</b>	<b>Postdoctoral Awards and Honors</b> <ul style="list-style-type: none"><li><b>Rothschild Postdoctoral Fellowship (withdrew)</b></li></ul>	2015
	<b>Ph.D. Awards and Honors</b> <ul style="list-style-type: none"><li><b>Dimitris N. Chorafas Prize</b></li><li><b>Thalheimer Scholarship</b> for graduate students by the <i>Wolf Foundation</i></li></ul>	2016 2014

- **Adams Fellowship** 2013-2015  
by the *Israeli Academy of Sciences and Humanities*
- **ITCS Best Student Paper** 2013  
for “*Properties and Applications of Boolean Function Composition*”

#### Undergraduate Awards and Honors

- Special Excellence Award from The Israeli Knesset (Parliament) 2005
- 2 SAMBA Scholarships for excellent undergraduate students  
in the Computer Science Department at The Technion 2003-2005
- 7 Technion President’s Excellence Awards 2001-2005

#### SERVICE

**Conference Refereeing:** STOC 2014, FOCS 2015, STACS 2015, STOC 2016, CCC 2016, ICALP 2016, SODA 2017, ITCS 2017, STOC 2017, CCC 2017, FOCS 2017, STOC 2018, CCC 2018, ICALP 2018

**Journal Refereeing:** Theory of Computing, SIAM Journal on Computing, ACM Transactions on Algorithms, Computational Complexity, Journal of the ACM.

**Grant Reviewing:** Israel Science Foundation.

#### ACCEPTED / PUBLISHED PAPERS

1. **On the Minimal Fourier Degree of Symmetric Boolean Functions**  
Amir Shpilka and Avishay Tal  
*IEEE Conference on Computational Complexity (CCC), 2011*  
*Combinatorica, June, 2014.*
2. **On the Degree of Univariate Polynomials over The Integers**  
Gil Cohen, Amir Shpilka and Avishay Tal  
*Innovations in Theoretical Computer Science (ITCS) conference, 2012*  
*Combinatorica, June, 2017.*
3. **Properties and Applications of Boolean Function Composition**  
Avishay Tal  
*Innovations in Theoretical Computer Science (ITCS) conference, 2013*  
**Best Student Paper Award**
4. **Improved Average-Case Lower Bounds for DeMorgan Formula Size**  
Ilan Komargodski, Ran Raz and Avishay Tal  
*IEEE Symposium on Foundations of Computer Science (FOCS), 2013*  
*SIAM Journal on Computing, 2017.*
5. **On the Structure of Boolean Functions with Small Spectral Norm**  
Amir Shpilka, Avishay Tal and Ben Lee Volk  
*Innovations in Theoretical Computer Science (ITCS) conference, 2014*  
*Computational Complexity journal, 2017.*
6. **Shrinkage of De Morgan Formulae by Spectral Techniques**  
Avishay Tal  
*IEEE Symposium on Foundations of Computer Science (FOCS), 2014*
7. **Two Structural Results for Low Degree Polynomials and Applications**  
Gil Cohen and Avishay Tal  
*The 19th International Workshop on Randomization and Computation (RANDOM), 2015*

8. **Matrix Rigidity of Random Toeplitz Matrices**  
Oded Goldreich and Avishay Tal  
*The 48th Annual Symposium on the Theory of Computing (STOC), 2016*  
*Computational Complexity journal, 2016.*
9. **On Fractional Block Sensitivity**  
Raghav Kulkarni and Avishay Tal  
*Chicago Journal of Theoretical Computer Science (CJTCS), 2016*
10. **On The Sensitivity Conjecture**  
Avishay Tal  
*The 43rd International Colloquium on Automata, Languages, and Programming (ICALP), 2016*
11. **Low-Sensitivity Functions from Unambiguous Certificates**  
Shalev Ben-David, Pooya Hatami and Avishay Tal  
*Innovations in Theoretical Computer Science (ITCS) conference, 2017*
12. **Time-Space Hardness of Learning Sparse Parities**  
Gillat Kol, Ran Raz and Avishay Tal  
*The 49th Annual Symposium on the Theory of Computing (STOC), 2017*
13. **Formula Lower Bounds via the Quantum Method**  
Avishay Tal  
*The 49th Annual Symposium on the Theory of Computing (STOC), 2017*  
Merge of **Computing Requires Larger Formulas than Approximating**  
and **The Bipartite Formula Complexity of Inner-Product is Quadratic**  
(both available on ECCC).
14. **Tight Bounds on The Fourier Spectrum of  $AC^0$**   
Avishay Tal  
*The 32nd Computational Complexity Conference (CCC), 2017*
15. **Lower Bounds for 2-Query LCCs over Large Alphabet**  
Arnab Bhattacharyya, Sivakanth Gopi and Avishay Tal  
*The 21st International Workshop on Randomization and Computation (RANDOM), 2017*
16. **Robust Sensitivity**  
Shachar Lovett, Avishay Tal and Jiapeng Zhang  
*The 29th Annual ACM-SIAM Symposium on Discrete Algorithms, SODA 2018*
17. **Pseudorandom Generators for Low-Sensitivity Functions**  
Pooya Hatami and Avishay Tal  
*Innovations in Theoretical Computer Science (ITCS) conference, 2018*
18. **The Choice and Agreement Problems of a Random Function**  
Or Meir and Avishay Tal  
*Information Processing Letters, Volume 133, 2018*
19. **Extractor-Based Time-Space Lower Bounds for Learning**  
Sumegha Garg, Ran Raz and Avishay Tal  
*The 50th Annual Symposium on the Theory of Computing (STOC), 2018*
20. **Improved Pseudorandomness for Unordered Branching Programs through Local Monotonicity**  
Eshan Chattopadhyay, Pooya Hatami, Omer Reingold and Avishay Tal  
*The 50th Annual Symposium on the Theory of Computing (STOC), 2018*

MANUSCRIPTS

21. **#SAT Algorithms from Shrinkage**  
Avishay Tal  
*Available on ECCC (2015)*
22. **Degree and Sensitivity: Tails of Two Distributions**  
Parikshit Gopalan, Rocco A. Servedio, Avishay Tal and Avi Wigderson  
*Available on ECCC/Arxiv (2016)*  
*A preliminary version of this paper by Parikshit Gopalan, Rocco A. Servedio and Avi Wigderson appeared in CCC, 2016.*
23. **On Constant-Depth Canonical Boolean Circuits for Computing Multilinear Functions**  
Oded Goldreich and Avishay Tal  
*Available on ECCC (2017)*