Curriculum Vitae

IDDO TZAMERET

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Mar. 2025

Academic & Research Positions

2021 – **Professor, Chair in Computational Complexity**
Department of Computing, Imperial College London, UK

2014 –2020 **Professor**
Computer Science Department, Royal Holloway, University of London, UK
(2014–2016: lecturer; 2017-2018- senior lecturer)

2011 – 2014 **Assistant Professor**
The Institute for Interdisciplinary Information Sciences (IIIS),
Tsinghua University, Beijing

2010 – 2011 **Postdoctoral researcher**
Institute for Theoretical Computer Science, Tsinghua University, Beijing (host: *Andrew Yao*)

2008 – 2010 **Postdoctoral researcher, EČC fellow**
Eduard Čech Center, Mathematical Institute, Academy of Science of the Czech Republic, Prague (host: *Pavel Pudlák*)

Visiting Positions

2023 Jan–May **Berkeley, University of California**, Simons Institute for the Theory of Computing, Visiting scientist and workshop organizer

2019 Jan–Apr **Oxford University**, Computer Science Department, United Kingdom

Education

2010 Ph.D. Computer Science, Tel Aviv University, Israel
Title: *Studies in algebraic and propositional proof complexity*
Advisors: Ran Raz (Weizmann Inst.) and Nachum Dershowitz (Tel Aviv)
(Preliminary dissertation submitted Aug. 2008; PhD title conferred June 2010)

2003 M.Sc Computer Science, Tel Aviv University, *summa cum laude*

2000 B.A. Computer Science (with an additional major in Philosophy), Tel Aviv University, *magna cum laude*

Research Interests

Foundations of computer science, computational complexity, limitations on concrete computational models (i.e., lower bounds), the interplay between algebra and computation, combinatorial, algebraic and logical approaches in complexity, and mathematics of computing. In particular, satisfiability, proof complexity, algebraic complexity and the theory of SAT-solving.

Grants and Funding

2025 – 2027 **EPSRC** (Engineering and Physical Sciences Research Council–UK Research & Innovation; grant number EP/Z534158/1) Imperial and Oxford joint grant (£800,000). (Principal Investigator with R. Santhanam (Oxford University))

2021 – 2026 **ERC** (European Research Council) Consolidator Grant (€1,900,000). *EPRICOT: Efficient Proofs and Computation: a Unified Algebraic Approach* (101002742). (Principal Investigator)

2014 – 2017 **NSFC** The National Natural Science Foundation of China Grant (61373002). (¥660,000). *New Approaches to the Limits of Efficient Propositional Reasoning: Foundations, Algorithms and Approximations*. (Principal Investigator)

2020 **ICMS** *International Centre for Mathematical Sciences, Edinburgh*. (£22,000). *Workshop on Circuit and Proof Complexity funding*. (Principal Organiser)

Scientific/Academic Honors

2014 **CNRS** *Young Experienced Researcher* (CR1) - French National Competitive Recruitment in Computer Science (Section 06)—**top 3** out of more than 100 international candidates (unfortunately had to decline)

2013 Finalist for the Tsinghua Young Academic Researcher Award

2010 – Supported by NSF China Grant and the National Basic Research Program of China Grant (participant)

2008 – 2010 Eduard Čech Center for Algebra and Geometry Research Fellowship

2008 Max-Planck-Institut für Informatik (Saarbrücken, Germany), two years research fellowship (unfortunately had to declined)

2008 Industrial Affiliates Conference (IAP), Tel Aviv University; **3rd** prize. Title of poster: *On the Length of Algebraic Proofs*

2003 – 2004 Excellence prize for Ph.D. students (Tel Aviv University)

2002 – 2003 Excellence prize for M.Sc. students (Tel Aviv University)

2001 – 2002 Excellence prize for M.Sc. students (Tel Aviv University)

Lab & Group Head

2021– Head of the *Complexity of Algorithms Group*, Department of Computing, Imperial College London.

2019– 2020 Head of the *Algorithms and Complexity Group*, Dep. Computer Science, Royal Holloway, University of London.

2012– 2014 Head of the *Laboratory for Complexity of Computation and Reasoning*, IIIS, Tsinghua University.

Publications

Most papers can be downloaded from my webpage at: https://www.doc.ic.ac.uk/~itzamere/Pub.html

PREPRINTS

[1] **Meta-Mathematics of Algebraic Circuit Lower Bounds and Conjectured Tautologies Hard for $AC^0[p]$-Frege**. Jiaqi Lu, Rahul Santhanam and Iddo Tzameret. Manuscript, 2024.

SURVEYS

[2] **From classical proof theory to P vs. NP: a Guide to Bounded Theories**. Iddo Tzameret. In *28th EACSL Annual Conference on Computer Science Logic* (**CSL**) 2020, January 13-16, 2020, Barcelona, Spain. LIPIcs, Schloss Dagstuhl - Leibniz-Zentrum fuer Informatik 2020.

[3] **Algebraic Proof Complexity: Progress, Frontiers and Challenges**. Tonnian Pitassi and Iddo Tzameret. *ACM SIGLOG News* (**SIGLOG**), **3** (3) (July 2016), pp. 21–43, ACM New York.

JOURNAL PUBLICATIONS

[4] **Iterated Lower Bound Formulas: A Diagonalization-Based Approach to Lower Bounds in Proof Complexity**. Rahul Santhanam and Iddo Tzameret. To appear in *SIAM Journal on Computing* (**SICOMP**) (Invited).

[5] **First-Order Reasoning and Efficient Semi-Algebraic Proofs** Fedor Part, Neil Thapen and Iddo Tzameret. *Annals of Pure and Applied Logic* (**APAL**), Vol. 176 (**1**), Elsevier, 2024.

[6] **Semi-Algebraic Proofs, IPS Lower Bounds and the τ-Conjecture: Can a Natural Number be Negative?** Yaroslav Alekseev, Dima Grigoriev, Edward Hirsch and Iddo Tzameret. In *SIAM Journal on Computing* (**SICOMP**), Vol. 53, Iss. 3, 2024.

[7] **Resolution with Counting: Different Moduli and Dag-Like Lower Bounds**. Fedor Part and Iddo Tzameret. *Computational Complexity* (**CC**), Springer Birkhäuser (2021) 30:2.

[8] **Uniform, Integral and Efficient Proofs for the Determinant Identities**. Iddo Tzameret and Stephen A. Cook. *Journal of the ACM* (**JACM**), Vol. 68, No. 2 (2021). **Invited**.

[9] **Characterizing Propositional Proof as Non-Commutative Formulas**. Fu Li, Iddo Tzameret and Zhengyu Wang. *SIAM Journal on Computing* (**SICOMP**), **47**(4), pp. 1424–1462, 2018.

[10] **Witnessing Matrix Identities and Proof Complexity**. Fu Li and Iddo Tzameret. *International Journal of Algebra and Computation* (**IJAC**) **28**(2), pp. 217–256. World Scientific, 2018.

[11] **Proof Complexity Lower Bounds from Algebraic Circuit Complexity**. Michael Forbes, Amir Shpilka, Iddo Tzameret, Avi Wigderson. Invited to *Theory of Computation* (**ToC**) **17**(10), 1-88, 2021. (Special issue on CCC'16). doi:10.4086/toc.2021.v017a010

[12] **Short Proofs for the Determinant Identities**. Pavel Hrubeš and Iddo Tzameret. *SIAM Journal on Computing* (**SICOMP**) **44** (2) (2015), pp. 340–383.

[13] **Short Propositional Refutations for Dense Random 3CNF Formulas**. Sebastian Müller and Iddo Tzameret. *Annals of Pure and Applied Logic* (**APAL**) **165** (2014), pp. 1864–1918.

[14] **Kolmogorov Complexity, Circuits, and the Strength of Formal Theories of Arithmetic**. Eric Allender, George Davie, Luke Friedman, Sam Hopkins and Iddo Tzameret. *Chicago Journal of Theoretical Computer Science* (**CJTCS**) (**5**) (2013), pp. 1–15.

[15] **Algebraic Proofs over Noncommutative Formulas**. Iddo Tzameret. *Information and Computation*, **209** (10), (2011), pp. 1269-1292.

[16] **Complexity of Propositional Proofs Under a Promise**. Nachum Dershowitz and Iddo Tzameret. *ACM Transactions on Computational Logic* (**ToCL**), **11**(3) (2010) ,pp. 1-30.

[17] **Resolution over Linear Equations and Multilinear Proofs**. Ran Raz and Iddo Tzameret. *Annals of Pure and Applied Logic* (**APAL**), **155**(3) (2008), pp. 194-224. doi:10.1016/j.apal.2008.04.001.

[18] **The Strength of Multilinear Proofs**. Ran Raz and Iddo Tzameret. *Computational Complexity* (**CC**), **17**(3), (2008), pp. 407–457.

[19] **Gap Embedding for Well-Quasi-Orderings**. Nachum Dershowitz and Iddo Tzameret. Electronic Notes in Theoretical Computer Science, Vol. 84 (2003).

CONFERENCE PUBLICATIONS

[20] **Feasibly Constructive Proof of Schwartz-Zippel Lemma and the Complexity of Finding Hitting Sets**. Albert Atserias and Iddo Tzameret. In *Proceedings of the 57th Annual ACM Symposium on the Theory of Computing* (**STOC**), Prague, 2025.

[21] **Functional Lower Bounds in Algebraic Proofs: Symmetry, Lifting, and Barriers**. Tuomas Hakoniemi, Nutan Limaye and Iddo Tzameret. In *Proceedings of the 56th Annual ACM Symposium on the Theory of Computing* (**STOC**), Vancouver, 2024.

[22] **Stretching Demi-Bits and Nondeterministic-Secure Pseudorandomness**. Iddo Tzameret and Lu-Ming Zhang. In *15th Innovations in Theoretical Computer Science Conference* (**ITCS**) 2024, January, 2024, Berkeley, CA, USA. *Also in Electronic Col. Comput. Complex.* TR23-057, 2023.

[23] **Simple Hard Instances for Low-Depth Algebraic Proofs**. Nashlen Govindasamy, Tuomas Hakoniemi and Iddo Tzameret. In *Symp. on Found. Computer Science* (**FOCS**), 2022.

[24] **First-Order Reasoning and Efficient Semi-Algebraic Proofs**. Fedor Part, Neil Thapen and Iddo Tzameret. In *Proceedings of the 36th Annual ACM/IEEE Symposium on Logic In Computer Science* (**LICS**), 2021.

[25] **Iterated Lower Bound Formulas: A Diagonalization-Based Approach to Lower Bounds in Proof Complexity**. Rahul Santhanam and Iddo Tzameret. In *Proceedings of the 53rd Annual ACM Symposium on the Theory of Computing* (**STOC**), 2021. **Invited to SIAM J. Comput. special issue (SICOMP)**

[26] **Semi-Algebraic Proofs, IPS Lower Bounds and the τ-Conjecture: Can a Natural Number be Negative?** Yaroslav Alekseev, Dima Grigoriev, Edward Hirsch and Iddo Tzameret. In *Proceedings of the 52th Annual ACM Symposium on the Theory of Computing* (**STOC**), 2020. Also in Electronic Colloquium on Computational Complexity TR19-142, 2019.

[27] **Resolution with Counting: Different Moduli and Dag-Like Lower Bounds**. Fedor Part and Iddo Tzameret. In *11th Innovations in Theoretical Computer Science Conference* (**ITCS**) 2020, January, 2020, Seattle, WA, USA. Also in electronic Colloquium on Computational Complexity TR18-117, 2018.

[28] **Uniform, Integral and Efficient Proofs for the Determinant Identities**. Iddo Tzameret and Stephen A. Cook. In *Proceedings of the 32th Annual ACM/IEEE Symposium on Logic In Computer Science* (**LICS**), 2017, pp. 1–12. **Invited to Journal of the ACM (JACM)**

[29] **Proof Complexity Lower Bounds from Algebraic Circuit Complexity**. Michael Forbes, Amir Shpilka, Iddo Tzameret, Avi Wigderson. In *Proceedings of the 31th Annual Computational Complexity Conference* (**CCC**), 2016, pp. 32:1–32:17. **Invited to Theory of Computing special issue**

[30] **Non-Commutative Formulas and Frege Lower Bounds: a New Characterization of Propositional Proofs**. Fu Li, Iddo Tzameret and Zhengyu Wang. In *Proceedings of the 30th Annual Computational Complexity Conference* (**CCC**), 2015, pp. 412–432. **Invited to Comput. Complexity special issue**

[31] **Sparser Random 3-SAT Refutation Algorithms and the Interpolation Problem**. Iddo Tzameret. *Proceedings of the 41st International Colloquium on Automata, Languages and Programming* (**ICALP**) track A, 2014.

[32] **Refuting Random 3CNF Formulas in Propositional Logic**. Sebastian Müller and Iddo Tzameret. In Johan van Benthem and Fenrong Liu, eds, *Logic Across the University: Foundations and Application—Proceedings of the Tsinghua Logic Conference*: 201–208. Beijing, 14-16 October 2013. Volume 47: Studies in Logic. College Publications, London.

[33] **Short Proofs for the Determinant Identities**. Pavel Hrubeš and Iddo Tzameret. In *Proc. of the 44th Annual ACM Symposium on the Theory of Computing* (**STOC**), 2012, pp. 193–212.

[34] **Short Propositional Refutations for Dense Random 3CNF Formulas**. Sebastian Müller and Iddo Tzameret. In *Proceedings of the 27th Annual ACM/IEEE Symposium on Logic in Computer Science* (**LICS**), 2012, pp. 501–510.

[35] **Algebraic Proofs over Noncommutative Formulas**. Iddo Tzameret. Invited to *The 7th Annual Conference on Theory and Applications of Models of Computation*, June 7-11, 2010. Volume 6108 of Lecture Notes in Comput. Sci., pages 60–71. Springer, Berlin.

[36] **The Proof Complexity of Polynomial Identities**. Pavel Hrubeš and Iddo Tzameret. In *Proceedings of the 24th Annual IEEE Conference on Computational Complexity* (**CCC**), 2009, pp. 41–51.

[37] **Complexity of Propositional Proofs Under a Promise**. Nachum Dershowitz and Iddo Tzameret. *Proceedings of the 34th International Colloquium on Automata, Languages and Programming* (**ICALP**) track A, 2007, 9–13.

[38] **Gap Embedding for Well-Quasi-Orderings**. Nachum Dershowitz and Iddo Tzameret. *Proceedings of the 10th Workshop on Logic, Language, Information and Computation* (**WOLLIC**), 2003.

[39] **Quasi-Ordered Gap Embedding**. Nachum Dershowitz and Iddo Tzameret. *Proceedings of the 6th International Workshop on Termination*, (WST), 2003, A. Rubio, ed., pp. 30–34.

NOTES

[40] **Håstad's Separation of Constant-Depth Circuits Using Sipser Functions**. 15 pages, 2009–2012.

UNPUBLISHED MANUSCRIPTS

[41] **On the Structure and Complexity of Symbolic Proofs of Polynomial Identities. Iddo Tzameret**. Manuscript, 35 pages, May 2008. Subsumed and improved in the above paper with P. Hrubeš.

DISSERTATIONS

[42] **Studies in Algebraic and Propositional Proof Complexity.** Ph.D. thesis, Computer Science Department, Tel Aviv University, 2008.

[43] **Kruskal-Friedman gap embedding theorems over well-quasi-orderings**. M.Sc. thesis, Computer Science Department, Tel Aviv University, 2003.

Selected ***Invited*** Talks (international conferences and workshops)

2024 Apr *Proof Complexity Workshop*, Oberwolfach, Germany. 30 minutes talk: Functional Lower Bounds in Algebraic Proofs: Symmetry, Lifting, and Barriers.

2023 Aug *Workshop on Algebra and Computation*, Chalmers, Univ. of Technology, Gothenburg, Sweden. 50 minutes talk: Algebraic Proofs and Computation: State-of-Art and Open Problems.

2020 Jan **Plenary Speaker**: *28th EACSL Annual Conference on Computer Science Logic, CSL 2020, January 13-16, 2020, Barcelona, Spain*. 50 minutes talk: From Classical Proof Theory to P vs. NP: a Guide to Bounded Theories.

2018 July Bertinoro (Forlì-Cesena), University Residential Center, Italy. *Ramsey Theory in Logic, Combinatorics and Complexity* (RaTLoCC'18): 50 minutes talk: Linear Algebra in Weak Arithmetic.

2018 Mar. Université Paris Diderot, Paris, France. *Workshop on Algebraic Complexity Theory* (WACT), 2018: 50 minutes talk: Algebraic Proof Complexity: Survey and Open Problems.

2018 Jan. Dagstuhl, Germany, *Proof Complexity*. 30 min talk: Nullstellensatz is Polynomially Equivalent to Sum-of-Squares over Algebraic Circuits. Jan., 2018.

2017 Aug. Mathematisches Forschungsinstitut Oberwolfach, Germany, *Proof Complexity and Beyond*. 30 min talk: Resolution of linear equations: survey and open problems. Aug. 13-19, 2017.

2016 May St. Petersburg, Russia, *Workshop on Proof Complexity*. Plenary Speaker. 50 min: Algebraic Proof Complexity. May 17-20, 2016.

2016 Feb. Workshop on Algebraic Complexity Theory (WACT), 2016, Tel Aviv, Israel. 50 min talk: Characterizing Propositional Proofs as Non-Commutative Formulas. Feb. 3-12, 2016.

2014 Jul. Vienna, Austria, *(FLoC) Vienna Summer of Logic: Proof Complexity 2014*: 50 minutes talk. Generating matrix identities and proof complexity.

2013 Oct. Beijing, China, *Logic Conference: Tsinghua 2013–Foundation and Applications*: 40 minutes talk: From classical proof theory to P vs. NP.

2013 Mar. Aarhus Univ, Denmark, *Workshop in Algebraic Complexity Theory, CTIC*: 45 minutes talk: Algebras of polynomial identities and lower bounds on arithmetic proofs

2012 Sep. Rome, Italy, *Workshop on the Limits of Theorem Proving*: 45 minutes talk: Short proofs for the determinant identities

2012 June Dubrovnik, Croatia, *The 13th Int. Workshop on Logic and Computational Complexity (LCC'12)*: 45 minutes talk: Recent developments in algebraic and propositional proof complexity

2011 Oct. Banff Center, Canada, *Workshop on Proof Complexity*: 45 minutes talk: Proof complexity of dense random 3CNF formulas

2010 Jun. 7th Annual Conference on Theory and Applications of Models of Computation: *special session on proof complexity*; half an hour talk: Algebraic proofs in noncommutative models

2009 Aug. Intractability center, Institute of Advanced Study and Princeton U., New Jersey, U.S., *Barriers in Complexity Theory Workshop*; half an hour talk: Proofs of polynomial identities

2008 Sep. Charles University, Prague, Fall School in Logic and Complexity, Czech Rep.; two hours invited talk: Bounds on equational proofs of polynomial identities

2007 Sep. Fall School in Logic and Complexity, Třešt, Czech Rep.; two hours invited talk: Resolution over linear equations and multilinear proofs

2006 Apr. Isaac Newton Institute of Mathematics, Cambridge University, U.K., *New directions in proof complexity workshop*; one hour invited talk: The strength of multilinear proofs

Selected Contributed Talks (international audience)

2024 June Vancouver, Canada; *Annual ACM Symposium on the Theory of Computation* (STOC); Functional lower bounds in algebraic proofs.

2023 June Warwick University. *Complexity Meetings Seminar Series*; Nondeterministic-Secure Pseudorandomness

2021 June Mathematical Institute, Academy of Science of the Czech Republic, Prague; *Logic seminar*; Iterated Lower Bound Formulas: a Diagonalization Based Approach to Proof Complexity

2020 June University of Chicago, US; *Annual ACM Symposium on the Theory of Computation* (STOC); online contributed talk: Can a Natural Number be Negative?

2017 June University of Reykjavik, Iceland; *32th Annual ACM/IEEE Symposium on Logic In Computer Science* (LICS); 25 minutes contributed talk: Uniform, integral and efficient proofs of the determinant identities.

2015 June FCRC, Portland, Oregon, *Proceedings of the 30th Annual Computational Complexity Conference* (CCC): June 17-19, 2015; 25 minutes contributed talk: A new characterization of propositional proofs: non-commutative formulas and Frege lower bounds.

2014 June Copenhagen University, Denmark, *41st International Colloquium on Automata, Languages and Programming* (ICALP), track A; half an hour contributed talk: Sparser Random 3-SAT Refutation Algorithms and the Interpolation Problem.

2012 June Department for Electrical Engineering and Computing at the University of Dubrovnik, Dubrovnik, Croatia; *27th Annual ACM/IEEE Symposium on Logic In Computer Science (LICS 2012)* ; half an hour contributed talk: Short propositional refutations for dense random 3CNF formulas

—— May New York, USA; *44th Annual ACM Symposium on the Theory of Computing* (STOC), 2012 Twenty minutes contributed talk: Short proofs for the determinant identities

2009 July Henry Poincare Institute for Mathematics, Paris, France, *The 24th Annual IEEE Conference on Computational Complexity* ; half an hour contributed talk: The proof complexity of polynomial identities

2007 July Instytut Informatyki, University of Wrocław, Poland, *The 24th International Colloquium on Automata, Languages and Programming* ; half an hour contributed talk: Complexity of propositional proofs under a promise

2003 Aug. Ouro Preto, Minas Gerais, Brazil, *The 10th Workshop on Logic, Language, Information and Computation* ; half an hour contributed talk: Gap embedding for well-quasi-orderings

—— June Valencia, Spain, *The International Workshop on Termination* ; half an hour contributed talk: Quasi-ordered gap embedding.

Seminars and other specialized talks (selected)

2025 Mar. Cambridge University, UK *Algorithms and Complexity seminar*. 50 minutes talk.

2020 Feb. Warwick University, UK, *Algorithms and Complexity seminar*. 50 minutes talk.

2018 Feb. Oxford University, UK, *Algorithms seminar*. 50 minutes talk: Linear Algebra in Weak Theories of Arithmetic.

2017 Mar. Leeds University, UK, *Algebra, Logic and Complexity Seminar*. 50 minutes talk.

2017 Feb. Durham University, UK, *Theory and Algorithms seminar*. 50 minutes talk.

2015 Apr. Oxford University, UK, *Algorithms seminar*. 50 minutes talk: A new characterization of propositional proofs.

2013 Dec Modéles de Calculet Complexité, Ecole Normale Supérieure de Lyon:
– Random k-SAT, Refutations Algorithms and Logic, one hour talk.
– Algebra, Proofs and Complexity: Recent Developments, one hour talk.

2013 Dec Algorithms and Complexity group, LIAFA, Laboratoire d'Informatique Algorithmique: Fondements et Applications, Université Paris Diderot-Paris 7: Proofs, Algebra and Complexity: Recent Development, one hour talk.

2012 May Algorithms and complexity seminar, Tsinghua Univ.: Short proof for linear algebra, one hour talk.

2011 Nov. FORMS: formal models seminar, Dept. of Software, Tsinghua university: Short propositional refutations for dense random 3CNF formulas, one hour talk.
2011 May Theoretical computer science seminar, KTH Royal Institute of Technology, Stockholm: Short propositional refutations for dense random 3CNF formulas, one hour talk.
2011 Feb Hot topics in computer science, Tsinghua Univ., Yao Class lecture, Beijing: Satisfiability and resolution, two fortyfive minutes talk.
2010 Dec Logic seminar, Tel Aviv Univ.: Average case separation in proof complexity, Two hours talk.
2010 Sep Theory lunch, Inst. for Theoretical Computer Science, Beijing: Proof complexity; Twenty five minutes introductory talk.
2010 May Logic seminar, Mathematical inst., Academy of Sciences, Prague: Algebraic proofs over noncommutative formulas; Two hours talk.
2009 Dec Complexity seminar, Mathematical inst., Academy of Sciences, Prague: On Fourier analysis of AC^0 functions; Four hours talk.
2009 Oct Logic seminar, Tel Aviv U.: Lengths of proofs and linear algebra; two hours talk.
—— May Computer science theory, Tel Aviv U.: The proof complexity of polynomial identities
2008 Nov Logic Seminar, Mathematical Inst. AS CR, Prague: The proof complexity of polynomial identities; Three parts, two hours each.
—— June Computer science colloquium, Tel Aviv U.: Complexity of symbolic proof of polynomial identities
2007 Jan Logic Seminar, Tel Aviv U.: Complexity of propositional proofs under a promise
2006 Mar. Computer science theory, Tel Aviv U.: The strength of multilinear proofs
—— Jan Computable set theory seminar, Tel Aviv U.: Kripke-Plates set theory
—— Jan Logic, Tel Aviv U.: Proof complexity generators
2005 Sep Pec fall school in logic, Pec pod Snezkou, Czech Rep.: Algebraic proof systems over multilinear formulas
2004 Dec Logic, Tel Aviv U.: Algebraic proof complexity
—— Apr Logic seminar, School of Computer Science, Tel Aviv University: Basic bounded arithmetic
2003 Oct Combinatorics seminar, Hebrew University, Mathematics department, Jerusalem: Well-quasi-ordering of finite trees
—— Mar Combinatorics seminar, School of Computer Science, Tel Aviv University: Well-quasi-ordering of finite trees
—— Computer Science Logic seminar, School of Computer Science, Technion, Haifa: Well-quasi-ordering of finite trees

Research Supervision

Postdoc Supervision

2022 – **Michal Garlik**: Imperial College London
2022 – 2023 **Tuomas Hakoniemi**: Imperial College London

Ph.D. Supervision

2024 – **Jiaqi Lu**: PhD student, Imperial College London
2022 – **Svyatoslav Gryaznov**: PhD student, Imperial College London

2022 – **Tal Elbaz**: PhD student, Imperial College London

2021 – **Nashlen Govindasamy**: PhD student, Imperial College London

2016 –2019 **Fedor Part**: PhD student, University of London. Computational complexity (Completed PhD: Jan 2019. Obtained postdoc position at ASCR, Prague, 2020).

2013 –2015 **Fu Li**: PhD student, IIIS, Tsinghua. Algebraic and proof complexity (after I left Tsinghua he completed his PhD from the theory of computation at *University of Texas at Austin (**UT Austin**)*).

Research Master's Students

2023 – 2024 **Jiaqi Lu**: MSc in AI, Imperial College London. Limitation of Learning and Provability.

2022 –2023 **Luming Zhang**: MSc in AI, Imperial College London. Learning, Pseudorandomness and Complexity. *Won best thesis award*.

Completed (Research) Undergraduate Theses

2012 – 2014 **Zhengyu Wang**: undergraduate Tsinghua CS pilot class student; undergraduate *thesis* in complexity. Accepted for an internship at the theory group of IBM, Almaden. Completed his PhD dissertation from ***Harvard University**, Theory of Computation group*.

2012 – 2013 **Fu Li**: undergraduate Tsinghua CS pilot class student. Algebraic and proof complexity.

2011 **Pei Dong**: undergraduate Tsinghua CS pilot class student; undergraduate *thesis* in proof complexity.

Teaching Responsibilities

Accreditation

Fellow of the *UK Higher Education Academy* (**HEA**) (reference number: PR117908).

Undergraduate Supervision

2015 – 2020 Regular advisor to undergraduate students (via *tutorials* and *projects*), Royal Holloway, University of London

Course Taught

2025, Spring *Introduction to Concrete Complexity*, graduate course, Imperial College London

2024, Spring *Methods and Tools in the Theory of Computing*, graduate course, Imperial College London

2015–2020 (fall term) *Databases*, undergraduate, Royal Holloway, University of London

2015–2017, 2019–2020 (fall term) *Semantic Web*, 3rd year, elective, Royal Holloway, University of London

2014, Spring *Theory of computation*, undergraduate course, Tsinghua University

2013, Spring *Theory of computation*, undergraduate course, Tsinghua University

2012, Fall *Advanced theoretical computer science* (co-teacher), graduate course, Tsinghua Univ.

2012, Spring *Theory of computation*, undergraduate course, Tsinghua University.
2011, Fall *Advanced theoretical computer science: computational and proof complexity*, graduate course (co-teacher), Tsinghua University.

Instructor

2010-2011 *Algebraic complexity reading group*, Tsinghua University.
2003 Spring *Temporal verification of reactive systems*, temporal logic and its application to verification (Lecturer: Zohar Manna), Tel Aviv University.

Course Development

2023–2024 Introduction to Concrete Complexity (elective graduate course), Imperial College London.
2015 Semantic Web (elective course), Royal Holloway, University of London.
2010–2011 IIIS, Tsinghua Univ.: Part of a team for developing the undergraduate course syllabus.
2011 IIIS, Tsinghua Univ.: Co-developing the graduate course "*computational and proof complexity*".

Seminars Organiser

2013–2014 *Theory of Computation Seminar*, IIIS, Tsinghua Univ.
2012–2013 *Theory of Computation Seminar*, IIIS, Tsinghua Univ.

Teaching Assistant

2002 Fall Discrete mathematics
—— Fall Logic for computer science
—— Spring Introduction to computer science
—— Spring C programming for biologists

Departmental Service

Imperial College London

2025– *Departmental Award Committee*
2022–2023 *Undergraduate Admission Committee*

University of London

2020–2021 *Post Graduate Research Lead* : director of PhD and MSc research studies at the computer science department. Royal Holloway, University of London.
2015–2020 *Final year projects committee* : co-coordination of projects, allocation, marking, and student presentations. Royal Holloway, University of London.

Recruitment Committees

2019, 2020 Faculty recruitment committee (short-listing panel, and interview panel), Royal Holloway, University of London.
2013, Aug. IIIS, Tsinghua Univ.: recruitment committee for undergraduate CS Pilot class (including interviews with candidates).
2011 IIIS, Tsinghua Univ.: recruitment committees for undergraduate and graduate students.

Seminar Coordinator

2011–2012 *Lunch-Meeting Seminar*, IIIS, Tsinghua Univ. Main graduate student seminar of the institute. Held separate practice talks for each speaker.
2011, Fall *Algorithms, Complexity and Cryptography seminar*, IIIS, Tsinghua Univ.

Professional Service

Workshop Organisation

2026 Full Semester (Sep.–Dec.): Organiser of *Logic and Computational complexity Semester*, Newton Institute Semester, Cambridge University, UK.
2024 2–4 Sep., Organiser of *Proof Complexity 2024* workshop, Oxford University.
2023 29 May, Organiser of *2nd Complexity Network Meeting*, Imperial College London.
2023 21-25 March, Chair – Workshop on *Proof Complexity and Meta-Mathematics*, Simons Meta-Complexity Semester, Simons Int., UC, Berkeley.
2022 15 Dec., Organiser of *1st Complexity Network Meeting*, Imperial College London.
2022 25-29 July, Principal organiser of *Workshop on Circuit and Proof Complexity*, Edinburgh, ICMS.

Program Committees Invitation

CCC (2024), **MFCS** (2020), **AAAI** (2019), **AAAI** (2018), **IJCAI** (2017), Logic and Computational Complexity (**LCC** 2015)

Grant Panel Membership

EPSRC (2022), New Horizons Outline Panel

Ph.D. Thesis Committees

2023 *Abdul Ghani*, Computer Science, Durham Univ., UK
2021 *Dimitrios Myrisiotis*, Computing, Imperial College London, UK
2019 *Luke Hinde*, Computer Science, Leeds Univ., UK
2014 *Navid Talebanfarld*, Computer Science, Aarhus Univ., Denmark
2014 *Hao Song*, IIIS, Tsinghua Univ.
2013 *Bangsheng Tang*, IIIS, Tsinghua Univ.
2012 *Youming Qiao*, IIIS, Tsinghua Univ.

Defense (and Pre-Defense) Committee Member

2014 *Hao Song*, IIIS, Tsinghua Univ.
2014 *Chenggang Wu*, IIIS, Tsinghua Univ.
2013 *Chengu Wang*, IIIS, Tsinghua Univ.
2013 *Bangsheng Tang*, IIIS, Tsinghua Univ.
2012 *Youming Qiao*, IIIS, Tsinghua Univ.
2012 *Lou Tiancheng*, IIIS, Tsinghua Univ.
2012 *Xiaohubei Wu*, IIIS, Tsinghua Univ.
2012 *Jing He*, IIIS, Tsinghua Univ.
2011 *Wei Yu*, IIIS, Tsinghua Univ.
2011 *Changcun Ma*, IIIS, Tsinghua Univ.

Referee and Review Activities

Selected journals and conferences refereed

Journal of the ACM (JACM)
SIAM Journal on Computing (SICOMP)
ACM Symp. on Theory of Computing (STOC)
IEEE Conf. on Comput. Complexity (CCC)
Theory of Computing (ToC)
ACM Transactions on Computational Logic (TOCL)
Journal of Symbolic Logic (JSL)
Intl. Coll. Automata, Language Programming (ICALP)
IEEE Annual Symposium on Logic in Computer Science (LICS)
Logical Methods in Computer Science (LMCS)
Annals of Pure and Applied Logic (APAL)
International Joint Conference on Artificial Intelligence (IJCAI)

Granting Agencies

Engineering and Physical Sciences Research Council UK (EPSRC)
The Royal Society (UK)
Czech Science Foundation
ERC (European Research Commission)

Societies

Reviewer for the *Mathematical Reviews* (American Mathematical Society (AMS))
2015 – 2019
Reviewer for *Princeton Press*
Reviewer for *Cambridge Press*