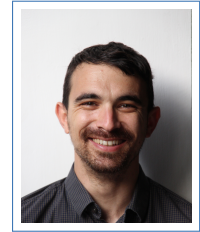


Lior Alon

CV

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Research interests

Mathematical physics, spectral geometry, quantum graphs, quasi-crystals, real algebraic geometry, dynamics, probability, and Number theory.

Academic Appointments

- 2022-2024 **Post-Doctoral Associate**, Massachusetts Institute of Technology (MIT).
Simons collaboration for waves localization. Host - David Jerison
- 2020-2022 **Post-Doctoral Member**, Institute for Advanced Study (IAS), Princeton.
Host - Peter Sarnak

Academic Degrees

- 2015-2020 **Ph.D. in mathematics**, *Technion*, Haifa, Israel.
Quantum Graphs - nodal count, Neumann count and generic eigenfunctions. Supervisor - Prof. Ram Band. Direct track.
- 2012-2015 **B.Sc. in mathematics and physics**, *Technion*, Haifa, Israel.
Cum Lauda.
- 2006-2009 **B.A. multidisciplinary curriculum**, *Haifa University*, Haifa, Israel.
As part of the naval academy training. Magna Cum Lauda.

Awards

Excellence in research:

- 2020 The Foundation for Excellency in Mathematics award for outstanding doctoral dissertation (Technion).
- 2019 Jacobs scholarship (Technion).
- 2018 Haim Hanani prize (Technion).
- 2018 Pinchi scholarship (Technion).

Excellence in teaching:

- 2018-2019 Consistent excellence in teaching prize.
- 2017 Excellent teaching assistant prize.

Publications

Published:

- L. Alon (2023). *Generic Laplacian eigenfunctions on metric graphs*. Journal d'Analyse Mathématique. doi: 10.1007/s11854-023-0308-x
- L. Alon, R. Band, G. Berkolaiko (2022). *Universality of nodal count distribution in large metric graphs*. Experimental Mathematics, 1-35.
- L. Alon, R. Band (2021). *Neumann Domains on Quantum Graphs*. Ann. Henri Poincaré 22, 3391 - 3454. doi:10.1007/s00023-021-01061-0
- L. Alon, R. Band, M. Bersudsky, S. Egger (2020). *Neumann domains on graphs and manifolds*. Analysis and Geometry on Graphs and Manifolds, vol. 461, 203-249.
- L. Alon, R. Band, G. Berkolaiko (2018). *Nodal Statistics on Quantum Graphs*. Communications in Mathematical Physics, 1–40. doi:10.1007/s00220-018-3111-2
- Y. Shapira, M. Mutzafi, G. Harari, I. Kaminer, L. Alon, M. Segev (2016). *Cerenkov radiation from particles carrying orbital angular momentum in a cylindrical waveguide*. Conference on Lasers and Electro-Optics (CLEO), 1-2

Accepted:

- L. Alon, M. Goresky. *Morse theory for discrete magnetic operators and nodal count distribution for graphs*. arXiv:2212.00830. To appear in Journal of Spectral Theory.
- L. Alon, A. Cohen, C. Vinzant. *Every real-rooted exponential polynomial is the restriction of a Lee-Yang polynomial*. arXiv:2303.03201. To appear in Journal of Functional Analysis.

Preprints:

- L. Alon, C. Vinzant. *Gap distributions of Fourier quasicrystals via Lee-Yang polynomials*. arXiv:2307.13498.

PhD dissertation:

- L. Alon (2020). *Quantum graphs - Generic eigenfunctions and their nodal count and Neumann count statistics*. Technion, Haifa, Israel. arXiv:2010.03004

Selected Talks

Selected seminar talks

- 2023 *Fourier Quasicrystals and Lee-Yang polynomials*. Mathematical physics seminar, Texas A&M.
- 2023 *Fourier Quasicrystals and stable polynomials*. PDE and Analysis seminar, MIT.
- 2022 *A magnetic interpretation of the nodal count on graphs*. CSDM, IAS. <https://www.ias.edu/video/magnetic-interpretation-nodal-count-graphs>
- 2021 *Neumann domains and count on metric (quantum) graphs*. Mathematical physics seminar, UC-Davis.
- 2020 *Towards universality of the nodal statistics on metric graphs*. Analysis seminar, IAS. <https://www.ias.edu/video/analysis/2020/1012-LiorAlon>
- 2019 *A universal limit conjecture for nodal statistics of quantum graphs*. Applied mathematics seminar, Yale.

Selected conference talks

- 2023 *Quantum graphs and algebraic geometry*. Workshop on Algebraic Geometry in Spectral Theory, ICERM.
- 2020 *Towards universality of the nodal statistics on metric graphs*. Quantum graphs in Mathematics, Physics and Applications, Stockholm University, Sweden.
- 2019 *Nodal and Neumann count distributions of quantum graphs*. Geometric aspects of harmonic analysis and spectral theory, Technion, Israel.
- 2018 *Quantum graphs, a central limit type conjecture for the nodal statistics*. Israel Physical Society annual meeting, Hebrew University, Israel.
- 2017 *The nodal count distribution for quantum graphs*. Analysis and geometry on graphs and manifolds, Potsdam, Germany.

Academic service

- 2018–today **Referee jobs.**
Inventiones, Journal of Spectral Theory, Journal of mathematical physics, Annals Henri Poincare, Experimental Mathematics, proceedings of the 8th ICCM
- 2018–2020 **Graduate Seminar organizer.**
Initiating and organizing the 'What Is' seminar, mathematics graduates seminar. Mathematics department, Technion.
- 2018 **Summer projects.**
Mentoring undergraduate students in a summer project together with Ram Band. Center for Mathematical Sciences, Technion.
- 2017 **Summer mini-course.**
Initiating and organizing a mini-course on k-theory. Mathematics department, Technion.

Teaching experience

- 2019 **Calculus, T.A.**
- 2015–2019 **Multivariable Calculus, T.A.**
- 2016–2018 **Introduction to Probability, T.A.**
- 2018 **Complex Analysis, T.A.**

Extra curricular activities

- 2016–2020 **Social events.**
Initiating and organizing the annual 'wine & cheese' social event for graduate students. Mathematics department, Technion.
- 2015–2020 **Students representative.**
Public activity as the representative of math graduate students. Students Association of the Technion.
- 2012–2015 **Students representative.**
Public activity as the representative of math undergraduate students. Students Association of the Technion.
- 2012–2017 **Competitive sports.**
Member of the Technion rowing crew, 3 times state-champions.

Non-academic experience

Seven years of service in the Israeli Navy as a naval officer.

Rank: Lieutenant commander (res.)

2011-2012 **Head of department, naval operations platoon.**

Planning, and executing highly complicated operations. Navy representative to civilian organizations. In charge of knowledge management

2009-2011 **Operations specialist officer in a missile boat.**

Leading a team of 15 soldiers. Operating technological systems.

2006-2009 **Naval academy.**

Languages

Hebrew (native speaker), English.