Lior Alon
CV

1 Dana St, unit 20
01238 Cambridge MA
USA
✆ (1)857-222-9067
✉ lioralon@mit.edu
https://www.lioralon.net
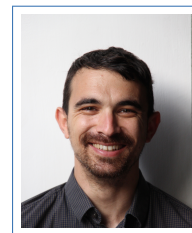
Research interests

Mathematical physics, quantum chaos, spectral geometry, quantum graphs, quasi-crystals, stable polynomials, dynamics and probability.

Academic Appointments

2022-2023	**Post-Doctoral Associate**, Massachusetts Institute of Technology (MIT). Simons collaboration for waves localization.
2020-2022	**Post-Doctoral Member**, Institute for Advanced Study (IAS), Princeton.

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, 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. *Generic Laplace eigenfunctions on metric graphs.* arXiv:2203.16111. Accepted to Journal d'Analyse Mathematique.

Preprints:

L. Alon, M. Goresky. *Morse theory for discrete magnetic operators and nodal count distribution for graphs.* arXiv:2212.00830.

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

2022   *A magnetic interpretation of the nodal count on graphs.* Computer Science and Discrete Mathematics seminar, Institute of Advanced Study, Princeton. https://www.ias.edu/video/magnetic-interpretation-nodal-count-graphs

2021   *Neumann domains and count on metric (quantum) graphs.* Mathematical physics seminar, University of California, Davis.

2020   *Towards universality of the nodal statistics on metric graphs.* Analysis seminar, Institute of Advanced Study, Princeton. https://www.ias.edu/video/analysis/2020/1012-LiorAlon

2019   *A universal limit conjecture for nodal statistics of quantum graphs.* Analysis and PDE seminar, Massachusetts Institute of Technology.

2019   *A universal limit conjecture for nodal statistics of quantum graphs.* Applied mathematics seminar, Yale University.

Selected conference talks

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**. *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.