

Dr. Yarden Mazor

✉ yardenm2@tauex.tau.ac.il
🖥 [Google scholar](#)

🌐 /Yarden Mazor
🌐 wavetheory.group
☎ 0524-838335

Senior Lecturer (Assistant Professor), School of electrical engineering, Tel-Aviv university.

🔬 Research areas

- Electromagnetic modelling. Wave theory. Analytical methods. Periodic, quasi-periodic, and space-time modulated media. Electrodynamics in moving and rotating systems.

🎓 Education

PhD - Electric Engineering - Tel-Aviv University (Direct track) 2011 – 2017

1D and 2D Non-reciprocal plasmonic structures in periodic and quasi-periodic arrangements. Tel-Aviv, Israel

- I investigated wave propagation in nano-electromagnetic systems using analytical and numerical modelling. This enabled me to study non-reciprocal wave propagation in 1D and 2D arrays of particles. Supervised by Prof. Ben Z. Steinberg.

B.Sc - Biomedical Engineering - Technion (Summa cum laude) 2005 – 2009

Focus on signal and image processing methods. Haifa, Israel

- 94.1 GPA, Ranked 1st in class.
- Four Times "technion president honors", one time "faculty dean honors."

🌐 Professional Career

Senior Lecturer - Tel-Aviv University 2020 – current

Wave theory group *School of Electrical Engineering*

- Biological tissue characterization using RF measurements.
- Time-modulated systems for enhanced sensing and detection capabilities.
- Wave phenomena in metamaterials, metasurfaces and 2D material.

Post-doctoral Fellow - University of Texas at Austin (Prof. Andrea Alu) 2017 – 2020

Wave propagation and excitation in complex systems. Austin, Texas

- Electrodynamics of moving and rotating systems.
- Time-modulated systems and how can they be used to mimic motion.
- Propagation of waves on anisotropic Cylindrical waveguides.

🚩 Professional Leadership

Early Career Symposium in US/Middle-East conference on photonics 2019

Organizing Committee *ASRC and CUNY, New York*

🚩 Professional Activity

- Peer review in journals/conferences
 - IEEE Transactions on Antennas and Propagation, IEEE Wireless Propagation Letters
 - Physical Review Applied, Physical Review B
 - Optics Express
 - IEEE AP/URSI conference reviewer

Teaching

- Lecturer - Tel-Aviv University** 2020 – 2022
“Electromagnetic Fields” - Undergraduate level electromagnetic theory
- Lecturer - Tel-Aviv University** 2022 – 2022
“Classical Electrodynamics” - Graduate level electromagnetic theory.
- Lecturer - Tel-Aviv University** 2022 – 2022
“Wave Transmission and Distributed Systems” - Undergraduate level electromagnetic theory.
- › 2021 Engineering dean excellence
 - › 2022 TAU rector excellence
- Lecturer - Tel-Aviv University** 2016
“Physics II”
- › Lecturing a mandatory, undergraduate course.
- Teaching assistant - Tel-Aviv University** 2012 – 2017
“Electromagnetic fields”, “Electromagnetic fields and waves for biomedical engineering”
- › Tutoring two mandatory undergraduate courses with consistent high scores in student reviews.
 - › Ranked one of the top 100 teaching assistants in Tel-Aviv university (2013-2016)
 - › Two times school of EE excellence in teaching award (2014, 2016), one time university rector excellence in teaching award (2014)
- Teacher at the pre-academic center, Technion** 2005 – 2010
Physics and Mathematics
Haifa, Israel
- › Consistently held high averages in student’s opinion polls (>4.2/5)

Academic honors, distinctions and fellowships

- Honorably mention - AP-S/URSI Student paper competition, 2016
- School of electrical engineering excellence in teaching prize, 2016
- Rozenberg foundation fellowship, 2015
- Third place in student paper competition, Metamaterials (Oxford), 2015
- Selected to participate in GYSS@One-north - Global young scientist summit in Singapore, 2015
- Prof. Nehemia LevZion 3-year excellence scholarship, 2014
- School of electrical engineering excellence in teaching, 2014
- Tel-Aviv university rector excellence in teaching, 2014
- Excellence scholarship - Tel-Aviv university, Faculty of engineering, 2013
- Faculty dean honors, 2008
- Four times Technion president honors, 2006-2007

Research Grants

- Israel Science Foundation (ISF)** 2022 – 2026
- › “Using time-varying components to design subwavelength Direction-of-Arrival detectors with enhanced performance”

📖 Journal publications - Peer reviewed journals

- T. Zchut, and Y. Mazor, "Deep-Subwavelength Direction-Of-Arrival Detection with Enhanced Sensitivity Using Temporal Modulation", *Phys. Rev. Applied* 19, 054041 (2023)
- T. Eini, T. Asherov, Y. Mazor, and I. Epstein, "Valley-polarized Hyperbolic-Exciton-Polaritons in Multilayer 2D Semiconductors at Visible Frequencies", *Phys. Rev. B* 106, L201405 (2022)
- Y. G. Peng, Y. Mazor, and A. Alù, "Fundamentals of Acoustic Willis Media," *Wave Motion*, Special Issue on Willis Materials, **112**, 102930 (2022)
- Y. Mazor, M. Cotrufo, and A. Alù, "Unitary Excitation Transfer between Coupled Cavities Using Temporal Switching", *Phys. Rev. Lett.*, **127**, 013902 (2021)
- G. Hu, M. Wang, Y. Mazor, C. W. Qiu, A Alù, "Tailoring Light with Layered and Moiré Metasurfaces", *Trends in Chemistry* (2021)
- H. Esfahlani, Y. Mazor and Andrea Alù, "Homogenization and design of acoustic Willis metasurfaces", *Phys. Rev. B*, **103**, 054306 (2021)
- Y. Mazor, A. Alù, "Routing optical spin and pseudospin with metasurfaces", *Phys. Rev. Applied*, **14**, 014029 (2020)
- G. Hu, Q. Ou, G. Si, Y. Wu, J. Wu, Z. Dai, A. Krasnok, Y. Mazor, Q. Zhang, Q. Bao, C. W. Qiu, A. Alù, "Topological polaritons and photonic magic angles in twisted α -MoO₃ bilayers", *Nature*, **582**, 209–213 (2020)
- G. Hu, A. Krasnok, Y. Mazor, C. W. Qiu, A. Alù, "Moiré Hyperbolic Metasurfaces", *Nano Letters*, **20**, 5, 3217–3224 (2020)
- Y. Mazor, A. Alù, "One-Way Hyperbolic Metasurfaces Based on Synthetic Motion", *IEEE Trans. Ant. Prop.*, **68**, 3, 1739 – 1747 (2020)
- Y. Mazor and Ben Z. Steinberg, "Rest frame interference in rotating structures and metamaterials", *Phys. Rev. Lett.*, **123**, 243204 (2019).
- Y. Mazor, and A. Alù, "Angular-Momentum Selectivity and Asymmetry in Highly Confined Wave Propagation Along Sheath-Helical Metasurface Tubes", *Phys. Rev. B*, **99**, 155425 (2019).
- Y. Mazor, and A. Alù, "Non-Reciprocal Hyperbolic Propagation over Moving Metasurfaces", *Phys. Rev. B*, **99**, 045407 (2019).
- Y. Mazor, M. Meir and Ben Z. Steinberg, "Dark Mode - Faraday Rotation Synergy for Enhanced Magneto-Optics", *Phys. Rev. B*, **95**, 035115 (2017).
- Y. Mazor and Ben Z. Steinberg, "Modal and excitation asymmetries in magneto-dielectric particle chains", *Phys. Rev. B*, **94**, 235114 (2016).
- Y. Mazor, Y. Hadad and Ben Z. Steinberg, "Planar one-way guiding in periodic particle arrays with asymmetric unit cell and general group-symmetry considerations", *Phys. Rev. B*, **92**, 125129 (2015).
- Y. Mazor and Ben Z. Steinberg, "Waves in almost periodic particle chains", *Phys. Rev. B*, **90**, 045151 (2014).
- Y. Mazor and Ben Z. Steinberg, "Meta-Weaves: Sector-way non-reciprocal metasurfaces", *Phys. Rev. Lett.*, **112**, 153901 (2014).
- Y. Hadad, Y. Mazor and Ben Z. Steinberg, "Green's function theory for one-way particle chains", *Phys. Rev. B*, **87**, 035130 (2013).
- Y. Mazor and Ben Z. Steinberg, "Longitudinal chirality, enhanced nonreciprocity, and nanoscale planar one-way plasmonic guiding", *Phys. Rev. B*, **86**, 045120 (2012).

Conference papers

- Y. Mazor, "Nonreciprocal Waves Guided by Azimuthally Varying, Magnetized, Cylindrical Metasurfaces", EMTS 2023.
- R. Gal-Katzir, and Y. Mazor, "Detecting a Dielectric Isotropic Inclusion in a Homogeneous Tissue Using Open-Coax Measurements", EMTS 2023.
- Y. Mazor, "Nonreciprocal guided waves on azimuthally varying cylindrical metasurfaces", Metamaterials 2022.
- T. Zchut, and Y. Mazor, "Enhanced Deep Subwavelength Direction-of-Arrival Sensing Based on Time Modulated Elements", Metamaterials 2022.
- T. Zchut, and Y. Mazor, "Enhanced Deep Subwavelength Direction-of-Arrival Sensing using time modulation", AP-S/URSI 2022.
- Y. Mazor, M Cotrufo, and A. Alù, "Unitary Energy Transfer Between Coupled Cavities Using Temporal Switching", Metamaterials 2021 (online).
- Y. Mazor, and A. Alù, "Non-reciprocal hyperbolic propagation over moving metasurfaces", EMTS 2019.
- Y. Mazor, and A. Alù, "Asymmetric surface wave guiding by helical impedance tubes", EMTS 2019.
- Y. Mazor, Ben Z. Steinberg, "Symmetry properties in of planar particle arrays and their role for nonreciprocal and one-way guiding" (invited), META 2017.
- Y. Mazor, M. Meir, and Ben Z. Steinberg, "Breach of electromagnetic symmetries in particle arrays" (invited), EMTS 2016.
- Y. Mazor, M. Meir, and Ben Z. Steinberg, "Enhanced non-reciprocity induced by synergy of Dark-Modes and Faraday rotation", EMTS 2016.
- Y. Mazor and Ben Z. Steinberg, "Left handedness and asymmetric excitation in linear arrays of isotropic electric-magnetic particles", EMTS 2016.
- Y. Mazor, M. Meir, and Ben Z. Steinberg, "Synergetic interaction of Dark-Modes and Faraday rotation for enhanced non-reciprocity", IEEE AP-S/URSI 2016.
- Y. Mazor and Ben Z. Steinberg, "Left handed modes in linear arrays of isotropic particles with electric and magnetic response", IEEE AP-S/URSI 2016.
- Y. Mazor and Ben Z. Steinberg, "Reciprocal and Non-Reciprocal Wave Phenomena In Quasi-Periodic Particle Chains", Metamaterials 2015.
- Y. Mazor, Y. Hadad and Ben Z. Steinberg, "Laterally asymmetric particle arrays for one-way guiding", Metamaterials 2015.
- Y. Mazor, Y. Hadad and Ben Z. Steinberg, "Laterally asymmetric particle arrays for one-way guiding", IEEE AP-S/URSI 2015.
- Y. Mazor, Y. Hadad and Ben Z. Steinberg, "Waves on Chains: Periodic, Clustered, and Quasi-periodic Arrangements", ICEAA 2014.
- Y. Mazor and Ben Z. Steinberg, "Meta-Weaves: Nonreciprocal Sector-Way Surfaces", CLEO:2014.
- Y. Mazor and Ben Z. Steinberg, "Wave Propagation In Quasi-Periodic Particle Chains", IEEE AP-S/URSI 2013.
- Y. Mazor and Ben Z. Steinberg, "Planar Nano-scale One-Way Optical Guiding", FiO/LS 2012.
- Y. Mazor and Ben Z. Steinberg, "Longitudinal Chirality, Particle Clusters, and Planar Nanoscale One-Way Guiding", IEEE AP-S/URSI 2012.