

Yoav Lahini

LIST OF PUBLICATIONS

Journal papers:

1. "Polarization dependent properties of waveguide arrays: band-structure anomaly and high-band localizations", Y. Lahini, D. Mandelik, Y. Silberberg, and R. Morandotti, *Optics Express* **13**, 1762 (2005).
2. "Nonlinearly induced relaxation to the ground state in a two-level system", D. Mandelik, Y. Lahini and Y. Silberberg, *Physical Review Letters* **95**, 073902 (2005).
3. "Ground-state selection as a four-wave-mixing process", A. Avidan, Y. Lahini, D. Mandelik and Y. Silberberg, *Physical Review A* **73**, 063811 (2006).
4. "Discrete X-waves formation in nonlinear waveguide arrays", Y. Lahini, E. Frumker, Y. Silberberg, S. Droulias, K. Hizanidis, R. Morandotti and D. N. Christodoulides, *Physical Review Letters*. **98**, 023901 (2007).
5. "Anderson localization and nonlinearity in one-dimensional photonic lattices" Y. Lahini, A. Avidan, F. Pozzi, M. Sorel, R. Morandotti, D. N. Christodoulides and Y. Silberberg, *Physical Review Letters*. **100**, 013906 (2008).
6. "Realization of quantum walks with negligible decoherence in waveguide lattices" H.B. Perets, Y. Lahini, F. Pozzi, M. Sorel, R. Morandotti and Y. Silberberg. *Physical Review Letters* **100**, 170506 (2008).
7. "Multiple breakup of high-order spatial solitons" O. Katz and Y. Lahini (equal contribution) and Y. Silberberg, *Optics Letters* **33**, 2830–2832 (2008).
8. "Effect of nonlinearity on adiabatic evolution of light", Y. Lahini, F. Pozzi, M. Sorel, R. Morandotti, D. N. Christodoulides and Y. Silberberg. *Physical Review Letters* **101**, 193901 (2008).
9. "Classical diffusion of a quantum particle in a noisy environment" A. Amir, Y. Lahini and H.B. Perets, *Phys. Rev. E* **79**, 050105(R) (2009).
10. "Universal correlations in nonlinear periodic 1D systems" Y. Silberberg, Y. Lahini, Y. Bromberg, E. Small and R. Morandotti, *Physical Review Letters* **102**, 233904 (2009).
11. "Classical and quantum correlations in waveguide lattices" Y. Bromberg, Y. Lahini, R. Morandotti and Y. Silberberg, *Physical Review Letters* **102**, 253904 (2009)
12. "Observation of a localization transition in quasi-periodic photonic lattices" Y. Lahini, R. Pugatch, F. Pozzi, M. Sorel, R. Morandotti, N. Davidson, and Y. Silberberg, *Physical Review Letters* **103**, 013901 (2009)
13. "Analysis of a new class of three-core adiabatic directional couplers", A. Salandrino, K. Makris, D. N. Christodoulides, Y. Lahini, Y. Silberberg and R. Morandotti, *Optics Communications*, **282**, 4524–4526 (2009).
14. "Photon correlations in waveguide lattices", Y. Bromberg, Y. Lahini, R. Morandotti and Y. Silberberg, *Optics and Photonic News*, **20** (12), 22 (2009).
15. "Hanbury-Brown and Twiss interferometry with interacting photons" Y. Bromberg and Y. Lahini (equal contribution), E. Small and Y. Silberberg, *Nature Photonics* **4**, 721 (2010).

16. **"Quantum walk of correlated photons"** A. Peruzzo, M. Lobino, J. C. F. Matthews, N. Matsuda, A. Politi, K. Poulios, X.-Q. Zhou, Y. Lahini, N. Ismail, K. Wörhoff, Y. Bromberg, Y. Silberberg, M. G. Thompson and J. L. O'Brien, *Science* **329**, 1500 (2010).
17. **"Quantum correlations in two-particle Anderson localization"** Y. Lahini, Y. Bromberg and Y. Silberberg, *Phys. Rev. Lett.* **105**, 163905 (2010).
18. **"Bloch oscillations of path-entangled photons"** Y. Bromberg, Y. Lahini, Y. Silberberg, *Phys. Rev. Lett.* **105**, 263604 (2010).
19. **"Hanbury Brown and Twiss correlations of Anderson localized waves"** Lahini, Y.; Bromberg, Y.; Shechtman, Y.; Szameit, A.; Christodoulides, D. N.; Morandotti, R.; Silberberg, Y. *Phys. Rev. A* **84**, 041806(R) (2011).
20. **"Perfect imaging through a disordered waveguide lattice"**, R. Keil, Y. Lahini et al., *optics letters* **37**, 809-811 (2012).
21. **"Disorder-enhanced nonlinear delocalization in segmented waveguide"**, Matthias Heinrich, Robert Keil, Yoav Lahini, Uta Naether, Felix Dreisow, Andreas Tünnerman, Stefan Nolte and Alexander Szameit, *New J. Phys.* **14**, 073026 (2012)
22. **"Quantum walk of two interacting Bosons"** Y. Lahini, M. Verbin, S. Huber, Y. Bromberg, R. Pugatch and Y. Silberberg *Phys. Rev. A* **86**, 011603(R) (2012).
23. **"Topological states and adiabatic pumping in quasicrystals"** K. E. Kraus, Y. Lahini, Z. Ringler, M. Verbin and O. Zilberberg (equal contribution), *Phys. Rev. Lett.* **109**, 106402 (2012).
See also: "Viewpoint: Quasicrystals, Meet Topological Insulators" Physics 5, 99 (2012)
Selected for Editor's Choice in Physics Review Letters
"Research highlights: Mid-guide spread" Nature Physics 8, 702 (2012)
Editor's Choice, Science 338, 6106, Issue of 26 October 2012
24. **"Fourier processing of quantum light"**, E. Poem, Y. Gilead, Y. Lahini and Y. Silberberg, *Phys. Rev. A* **86**, 023836 (2012)
25. **"Observation of Topological Phase Transitions in Photonic Quasicrystals"**, M. Verbin, Y. E. Kraus, O. Zilberberg, Y. Lahini and Yaron Silberberg, *Phys. Rev. Lett.* **110**, 076403 (2013) , *Selected for Editor's Choice.*
26. **"Self-trapping threshold in disordered nonlinear photonic lattices"** U. Naether, M. Heinrich, Y. Lahini, S. Nolte, R. A. Vicencio, M. I. Molina, and A. Szameit, *Optics Letters* **38**, 1518-1520 (2013)

Book Chapters

1. **"Anderson Localization of Light: disorder-induced linear, nonlinear, and quantum phenomena"** Y. Lahini, T. Schwartz, Y. Silberberg, and M. Segev *"Optical properties of photonic structures: interplay of order and disorder"*, CRC Press Taylor & Francis

Popular articles

1. **"Hanbury Brown and Twiss Interferometry with Interacting Photons"**
<http://www.2physics.com/2010/11/hanbury-brown-and-twiss-interferometry.html>
2. **"Topological States and Adiabatic Pumping in Quasicrystals"**
<http://www.2physics.com/2012/10/topological-states-and-adiabatic.html>

Conference papers - Invited talks:

1. **"Linear and nonlinear photonics in inhomogeneous waveguide lattices"** in *LEOS the annual meeting of the Photonics Society* (2009).

2. **“Anderson Localization of light: from nonlinear to non-classical effects”** in *Summer School: “Disordered Systems: From Condensed-Matter Physics to Ultracold Atomic Gases”* (2011)
3. **“Quantum walks on lattices: from disorder to interaction effects”** in *Scattering systems with complex dynamics: X-Billiard workshop*: (2011)
4. **“Quantum correlations and topological phases in photonic lattices “** Workshop: “Quantum Walks, Quantum Simulators, and Quantum Networks”, 2012.
5. **“Quantum correlations and topological phases in photonic lattices “** WE-Heraeus-Seminar on “Quantum-Optical Analogies: a Bridge Between Classical and Quantum Physics” 2012.
6. **“Quantum walks – from integrated photonics to cold atoms”**, Wilhelm und Else Heraeus-Seminar: Classical and Quantum Transport in Complex Networks, 2013
7. **“Topological and nonlinear properties of photonic quasicrystals”**, ICQ12: the 12th International Conference on Quasicrystals, 2013

Conference papers - talks:

1. **“Enhanced Nonlinear Beam Steering near Band-Edges of Waveguide Arrays”**, Y. Lahini, D. Mandelik, A. Avidan, Y. Silberberg; in *NLW 2005, paper ThC2*.
2. **“Ground-State Selection and Modal ‘Cooling’ in a Nonlinear Waveguide”**, Y. Lahini, D. Mandelik, A. Avidan, Y. Silberberg; in *NLW 2005, paper FB5*.
3. **“Stability of Nonlinear Bound States in the Presence of a Continuous Spectrum,”** A. Avidan, Y. Lahini, D. Mandelik, and Y. Silberberg; in *NLW 2005, paper PDP6*.
4. **“Nonlinear Tuning of the Superprism Effect near Photonic Band Edges”**, Y. Lahini, D. Mandelik, Y. Silberberg; in *CLEO/QELS 2006, paper QTuC3*.
5. **“Discrete Nonlinear X-Waves in Waveguide Arrays”**, Y. Lahini, E. Frumker, Y. Silberberg, S. Droulias, K. Hizanidis, R. Morandotti, D. N. Christodoulides; in *CLEO/QELS 2006, paper QFB5*.
6. **“Direct Observation of Anderson Localized Modes and the Effect of Nonlinearity,”** Y. Lahini, A. Avidan, Y. Silberberg, F. Pozzi, M. Sorel, and R. Morandotti in *Photonic Metamaterials: From Random to Periodic (META) 2006, paper ThC4*.
7. **“Excitation of Discrete X-waves in Nonlinear Waveguide Arrays”**, Y. Lahini, E. Frumker, Y. Silberberg, S. Droulias, K. Hizanidis, R. Morandotti and D. N. Christodoulides; in *LEOS 2006 The 19th Annual Meeting of the IEEE Lasers & Electro-Optics Society, paper MI5*.
8. **“EIT and STIRAP in waveguides: linear and nonlinear effects in a three-core coupled system”** Y. Lahini, F. Pozzi, M. Sorel, R. Morandotti, and Y. Silberberg; in *Nonlinear Photonics 2007, paper JWBPD1*
9. **“Anderson localization, wave diffusion, and the effect of nonlinearity in randomized photonic lattices”** Y. Lahini, A. Avidan, F. Pozzi, M. Sorel, R. Morandotti, D. N. Christodoulides and Y. Silberberg in *Photonic Metamaterials: From Random to Periodic (META) 2007, paper MB4*.
10. **“Anderson localization in waveguide lattices and the effect of nonlinearity”**, Y. Lahini, A. Avidan, F. Pozzi, M. Sorel, R. Morandotti and Y. Silberberg, in *FRISNO 9 (2007), the 9th European/French Israeli Symposium on Nonlinear and Quantum Optics*.
11. **“Anderson localization and nonlinearity in one dimensional photonic lattices”** in *IPS 2007 - the 53rd annual meeting of the Israel Physical Society (2007)*.

12. **"Anderson Localization and Nonlinearity in One Dimensional Disordered Waveguide Arrays"** Y. Lahini, A. Avidan, F. Pozzi, M. Sorel, R. Morandotti, D. N. Christodoulides and Y. Silberberg; *in Nonlinear Photonics 2007, paper JMB6*
13. **"Wavepacket Expansion in Nonlinear Disordered Lattices"**, Y. Lahini, F. Pozzi, M. Sorel, R. Morandotti, and Y. Silberberg; *in CLEO/QELS 2008, paper QThG*
14. **"Delocalization of Localized Modes in Nonlinear Disordered Waveguide Lattices"**, Y. Lahini, F. Pozzi, M. Sorel, R. Morandotti, and Y. Silberberg; *in CLEO/QELS 2008, paper QThG*
15. **"STIRAP in Waveguides: Linear and Nonlinear Effects in an Adiabatic Three-Core System"** Y. Lahini, F. Pozzi, M. Sorel, R. Morandotti, and Y. Silberberg; *in CLEO/QELS 2008, paper QMI4*
16. **"Observation of a Localization Transition in Quasi-Periodic Photonic Lattices"** Y. Lahini, R. Pugatch, F. Pozzi, M. Sorel, R. Morandotti, N. Davidson and Y. Silberberg; *in Frontiers in Optics 2008, paper FThJ2 (paper competition finalist).*
17. **"Nonlinear Effects in Adiabatic Optical Structures"** Y. Lahini, F. Pozzi, M. Sorel, R. Morandotti, and Y. Silberberg; *in Frontiers in Optics 2008, paper FThC5*
18. **"Hanbury-Brown and Twiss Interferometry with Interacting Photons"**, Y. Bromberg, Y. Lahini and Y. Silberberg, *in Frontiers in Optics 2008, paper FTuI1*
19. **"Classical and Quantum Correlations in Waveguide Lattices"**, Y. Bromberg, Y. Lahini, R. Morandotti and Y. Silberberg, *in Frontiers in Optics 2008, paper FMA4*
20. **"Intensity Correlations in Disordered Photonic Lattices"**, Y. Lahini, Y. Bromberg, F. Pozzi, M. Sorel, R. Morandotti, D. Christodoulides and Y. Silberberg, *Frontiers in Optics 2009, paper FMC2;*
21. **"Quadratic Compressed Sensing in a Waveguide Array "**, Y. Shechtman, E. Small, Y. Lahini, M. Verbin, Y. C. Eldar, Y. Silberberg and M. Segev *in CLEO 2013, paper CTh4L*
22. **"Nonlinear and Quantum Optics of Disordered Media"**, Y. Lahini, Complex Nano-Photonics Science camp, Berkshire UK, 2013;

Conference papers - posters:

1. **"Nonlinearly induced relaxation in a two level system"**, Y. Lahini, D. Mandelik and Y. Silberberg, *in FRISNO 8, the 8th European/French Israeli Symposium on Nonlinear and Quantum Optics, paper Mo-5.*
2. **"All-Optical Tuning of the Superprism Effect near Band Edges of Nonlinear Waveguide Arrays"**, Y. Lahini, D. Mandelik, and Y. Silberberg, *in Photonic Metamaterials: From Random to Periodic (META) 2006, paper ThD10.*
3. **"Observation of Discrete Nonlinear X-waves"**, Y. Lahini, E. Frumker, Y. Silberberg, S. Droulias, K. Hizanidis, R. Morandotti, D. N. Christodoulides, *in Photonic Metamaterials: From Random to Periodic (META) 2006, paper ThD3.*
4. **"The effect of nonlinearity on the evolution of light in adiabatic waveguides"**, Y. Lahini, F. Pozzi, M. Sorel, R. Morandotti, D. N. Christodoulides and Y. Silberberg *WE-Heraeus-Seminar "Discrete optics and beyond", 2008.*
5. **"Quantum and Classical correlations in waveguide arrays"**, Y. Bromberg, Y. Lahini, R. Morandotti, and Y. Silberberg. *WE-Heraeus-Seminar "Discrete optics and beyond", 2008.*

6. **"Anderson localization and nonlinearity in disordered waveguide arrays"**, Y. Lahini, F. Pozzi , M. Sorel, R. Morandotti , D. N. Christodoulides and Y. Silberberg. *WE-Heraeus-Seminar "Discrete optics and beyond"*, 2008. *Awarded the best poster prize.*
7. **"Direct observation of a localization transition in quasi-periodic photonic lattices"** Y. Lahini, R. Pugatch, F. Pozzi, M. Sorel, R. Morandotti, N. Davidson, and Y. Silberberg, *in the 10th European/French Israeli Symposium on Nonlinear and Quantum Optics, paper Wed-18.*
8. **"Experiments in nonlinear disordered and incommensurate photonic lattices"**, Y. Lahini, A. Avidan, F. Pozzi , M. Sorel, R. Morandotti , D. N. Christodoulides and Y. Silberberg *in Anderson localization in nonlinear and many body systems, MPIPKS (2009).*
9. **"Nonlinear dynamics in disordered and incommensurate photonic lattices"**, Y. Lahini, R. Pugatch, F. Pozzi , M. Sorel, R. Morandotti , D. N. Christodoulides and Y. Silberberg *in the International Fermi School of Physics 'Nano optics and atomics' (2009).*
10. **"Quantum walks and quantum correlations in optical waveguide lattices"**, Y. Lahini, Y. Bromberg and Y. Silberberg *in Entanglement in Atomic systems, WIS (2010).*