Dikla Caspi – CV

Personal Details

Name: Dikla Caspi (Oren)

Id: 300732146

Citizenship: Israeli

Date of Birth: January 24th 1987

Home Address: 3 Harav Kalisher, Haifa 3271221, Israel

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Education

2013-2018	Direct Ph.D., Physics Department Technion – Israel Institute of Technology Advisor: Prof. Moti Segev. Topic: Structure based state recovery of quantum light. In my PhD, I worked on two main topics. The first is recovering quantum states from incomplete measurements or missing information. I worked on devising methods, including measurement setups and algorithms, to recover the states. That topic involved measurement theory in quantum mechanics, quantum optics, and signal processing. Related to signal processing, I worked with tools and algorithms drawn from Compressed Sensing and Matrix Completion. The second topic was quantum nonlinear optics and open systems. I worked on the theory part of experiments involving nonlinear effects (loss and wave mixing) in single photons. PhD graduation date: May 2019.
2010-2013	M.Sc., Physics Department Technion – Israel Institute of Technology Advisor 2012: Prof. Yosi Avron Advisor 2013: Prof. Moti Segev
2007-2010	B.Sc, Physics and Math Departments Technion – Israel Institute of Technology Cum Laude

Military Service

2005-2007	Intelligence corps technological unit

Professional Experience

2009-2013,	Technion – Israel Institute of Technology

2016-2017	**Teaching assistant** • "ODE h" – Ordinary differential equations for mechanical engineering • "Algebra 1m" – Linear algebra for electrical engineering • "QIP" – Quantum information processing for computer science • "Physics 3 h" – modern physics for electrical engineering • "Quantum Information" – quantum information in the Physics department
2013-2015	Technion – Israel Institute of Technology Ironi Gimel high school, Haifa **Physics teacher** Teaching in a special physics program, Research Based Learning, developed in our group. The students in the program (middle school) obtain the physical law through research and experiments, without being told about them before hand, and develop the necessary tools on the way.
2003-2005	**Popular Science Features Writer and Translator** • Translator in Hayadan Hebrew science news website. • Article editor in Popular Science Magazine online newsletter.

Publications

1. Oren, Dikla and Shechtman, Yoav and Mutzafi, Maor and Eldar, Yonina C and Segev, Mordechai, "Sparsity-based recovery of three-photon quantum states from two-fold correlations", *Optica* 3, 3 (2016), pp. 226--232.
2. Oren, Dikla and Mutzafi, Maor and Eldar, Yonina C. and Segev, Mordechai, "Quantum state tomography with a single measurement setup", *Optica* 4, 8 (2017), pp. 993.
3. Stav, Tomer and Faerman, Arkady and Maguid, Elhanan and Oren, Dikla and Kleiner, Vladimir and Hasman, Erez and Segev, Mordechai, "Quantum entanglement of the spin and orbital angular momentum of photons using metamaterials", *Science* 361, 6407 (2018), pp. 1101--1104.
4. Blanco-Redondo, Andrea and Bell, Bryn and Oren, Dikla and Eggleton, Benjamin J and Segev, Mordechai, "Topological protection of biphoton states", *Science* 362, 6414 (2018), pp. 568--571.
5. Lyons*, Ashley and Oren*, Dikla and Roger, Thomas and Savinov, Vassili and Valente, Joao and Vezzoli, Stefano and Zheludev, Nik…, "Coherent metamaterial absorption of two-photon states with 40% efficiency", *Physical Review A 99 (2019), Rapid Communications*.
6. Maguid, Elhanan and Stav, Tomer and Faerman, Arkady and Oren-Caspi, Dikla and Kleiner, Vladimir and Segev, Mordechai and Hasman, Erez, “Quantum Photonic Metamaterials”, Optics and Photonics News (2019)

Conferences

1. D. Oren, Y. Shechtman, Y. C. Eldar, and M. Segev, "Structure-Based Super-Resolution in Quantum Information," in *CLEO: 2013*, OSA Technical Digest (online) (Optical Society of America, 2013), paper QF1B.7.

2. D. Oren, M. Mutzafi, Y. C. Eldar, and M. Segev, "Sparsity-based Recovery of Quantum States From Partial Measurements in a Single Setup," in *Frontiers in Optics 2014*, OSA Technical Digest (online) (Optical Society of America, 2014), paper FTh1C.5.
3. D. Oren, Y. C. Eldar, and M. Segev. "Weak measurements compressed sensing quantum state tomography." Lasers and Electro-Optics (CLEO), 2016 Conference on. IEEE, 2016.
4. D. Oren, M. Mutzafi, Y. C. Eldar, and M. Segev, "Quantum State Tomography with a Single Observable," in *Conference on Lasers and Electro-Optics*, OSA Technical Digest (online) (Optical Society of America, 2017), paper FW4E.5.

Schools and Workshops

2019	Fronties of Quantum Science, Kfar Blum, Israel
2009	Asher Peres Physics School, Sydney, Australia Topic: The Edge twixt Quantum and Classical Phenomena

Honors and Awards

Winter 2009, Spring 2010, Winter 2010, Winter 2011	Excellent TA, ODE
Winter 2011	Excellent TA, Algebra 1m
Spring 2012, Spring 2013	Excellent TA, Quantum Information
Winter 2012	Excellent TA, Modern Physics
Spring 2008, Winter 2008, Spring 2010	President's list
Spring 2009	Dean's list
2007-2010	Technion Excellence Program
2005	Amos De-Shalyt Fund Scholarship

Programming Languages

1. Python
2. Matlab
3. C
4. Assembly

Other Professional Training

2017	Pre-teachers training, Iyengar Yoga
2011	APC1 pastry making course, Estella Cullinary school