

Curriculum vitae

Personal Data

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Date of Birth	October 26, 1979
Nationality	Israel
Marital status	Married
Children	two daughters



Professional Experience and Education

06.2016 – present	Assistant professor (SNF) at ETH Zürich, CH Electronic and photonic quantum engineered systems
09.2015 – 05.2016	Scientist at ABB Research Center, Dättwil, CH Theoretical modeling for applied energy research
05.2013 – 12.2015	Postdoctoral researcher at ETH Zürich, CH Research on topological and quantum engineered systems
12.2012 – 04.2013	Postdoctoral researcher at the Weizmann Institute of Science, Israel Research on quantum measurements in solid state devices
03.2008 – 12.2012	Doctoral studies at the Weizmann Institute of Science, Israel Ph.D. thesis on “Weak measurements in solid state physics: manifestations and implications”
10.2005 – 12.2007	M.Sc. at the University of Basel, Switzerland. Study of Physics. Thesis on “Multi-particle qubits”
10.2001 – 10.2004	B.Sc. at the Hebrew University in Jerusalem, Israel Study of Physics, Mathematics, and Computer Science

Research Interests

Condensed matter theory

- Exotic material properties in quantum engineered systems
 - Topological states in quasi-periodic models
 - Topological indices of interacting, driven, and dissipative bosons
 - Many-body localization
 - Artificial dimensions and gauges in metamaterials
 - Parametrically driven light—matter systems
- Quantum transport in mesoscopic devices
 - Interplay of measurement and virtual transport
 - Signatures of anyon exchange statistics in electronic interferometers
 - Weak measurements and the Weak Value protocol
 - Dot—cavity electronics in the strong coupling limit

Academic Achievements

Awards

John F. Kennedy Prize, awarded by the Feinberg Graduate School of the Weizmann Institute of Science, for academic excellence and scientific accomplishment

Spark award, awarded by ETH Zurich for top 20 best inventions of 2015.

List of publications

I. Peer-reviewed articles

I.a. Submitted

- [P1] L. Papariello, Oded Zilberberg, A. Eichler, and R. Chitra,
“Ultrasensitive hysteretic force sensing with parametric nonlinear oscillators”,
[\[arXiv:1603.07774\]](#).
Contribution: Initiated the idea, theory analysis, wrote the paper.

I.b. Published

- [P2] H. M. Price, Oded Zilberberg, T. Ozawa, I. Carusotto, and N. Goldman,
“On the measurement of Chern numbers through center-of-mass responses”,
[Phys. Rev. B 93, 245113 \(2016\)](#) [[arXiv:1602.01696](#)].
Contribution: Initiated the idea, theory analysis, wrote the paper.
- [P3] T. Ozawa, H. M. Price, N. Goldman, Oded Zilberberg, and I. Carusotto,
“Synthetic dimensions in integrated photonics: From optical isolation to 4D quantum Hall physics”,
[Phys. Rev. A 93, 043827 \(2016\)](#) [[arXiv:1510.03910](#)].
Contribution: Initiated the idea, theory analysis, wrote the paper.
- [P4] Oded Zilberberg, A. Romito, and Y. Gefen,
“Many-body manifestation of interaction-free measurement: the Elitzur-Vaidman bomb”,
[Phys. Rev. B 93, 115411 \(2016\)](#) [[arXiv:1512.01086](#)].
Contribution: Theory support, consultation, wrote the paper.
- [P5] M. Lohse, C. Schweizer, Oded Zilberberg, M. Aidelsburger, and I. Bloch,
“A Thouless quantum pump with ultracold bosonic atoms in an optical superlattice”,
[Nature Phys. \(2015\)](#) [[arXiv:1503.02928](#)].
Contribution: Theory support, consultation, wrote the paper.
- [P6] H. M. Price, Oded Zilberberg, T. Ozawa, I. Carusotto, and N. Goldman,
“Four-dimensional quantum Hall effect with ultracold atoms”,
[Phys. Rev. Lett. 115, 195303 \(2015\)](#) (Editor’s suggestion) [[arXiv:1505.04387](#)].
Selected for a [synopsis](#) in Physics - an APS journal highlighting exceptional research.
Contribution: Initiated the idea, theory analysis, wrote the paper.
- [P7] C. RöSSLer, D. Oehri, Oded Zilberberg, G. Blatter, M. Karalic, J. Pijnenburg,
A. Hofmann, T. Ihn, K. Ensslin, C. Reichl, and W. Wegscheider,
“Spin-Coherent Dot–Cavity Electronics”,
[Phys. Rev. Lett. 115, 166603 \(2015\)](#) (Editor’s suggestion) [[arXiv:1503.02928](#)].
Selected for a viewpoint in [Physics 8, 98 \(2015\)](#) - an APS journal highlighting exceptional research.
Contribution: Theory analysis, wrote the paper.
- [P8] D. Bischoff, M. Eich, Oded Zilberberg, C. RöSSLer, T. Ihn, and K. Ensslin,
“Measurement back-action in stacked graphene quantum dots”,
[Nano Lett. 15, 6003 \(2015\)](#) [[arXiv:1602.08603](#)].
Contribution: Theory support and consultation, wrote the paper.
- [P9] R. Chitra and Oded Zilberberg,

- “Dynamical many-body phases of the parametrically driven, dissipative Dicke model”**,
[Phys. Rev. A 92, 023815 \(2015\)](#) [[arXiv:1501.07098](#)].
Contribution: Theory analysis, wrote the paper.
- [P10] M. Verbin, Oded Zilberberg, Y. Lahini, Y. E. Kraus, and Y. Silberberg,
“Implementation of topological pumping over a Fibonacci quasicrystal”,
[Phys. Rev. B 91, 064201 \(2015\)](#) [[arXiv:1403.5897](#)].
Contribution: Initiated the idea, main theory analysis, wrote the paper.
- [P11] Oded Zilberberg, A. Carmi, and A. Romito,
“Measuring cotunneling in its wake”,
[Phys. Rev. B 90, 205413 \(2014\)](#) [[arXiv:1403.5897](#)].
Contribution: Initiated the idea, main theory analysis, wrote the paper.
- [P12] C.-E. Bardyn, S. D. Huber, and Oded Zilberberg,
“Seeing bulk topological properties of band insulators in small photonic lattices”,
[New J. Phys. 16, 123013 \(2014\)](#) [[arXiv:1312.6894](#)].
Contribution: Initiated the idea, main theory analysis, wrote the paper.
- [P13] Y. E. Kraus, Oded Zilberberg, and R. Berkovits,
“Enhanced compressibility due to repulsive interaction in the Harper model”,
[Phys. Rev. B 89, 161106\(R\) \(2014\)](#) [[arXiv:1311.4711](#)].
Contribution: Initiated the idea, theory analysis, wrote the paper.
- [P14] G. Campagnano, Oded Zilberberg, I. V. Gornyi, and Y. Gefen,
“Hanbury-Brown and Twiss correlations in quantum Hall systems”,
[Phys. Rev. B 88, 235415 \(2013\)](#) (Editor’s suggestion) [[arXiv:1309.6418](#)].
Contribution: Equal contribution, main theory analysis, wrote the paper.
- [P15] Oded Zilberberg, A. Romito, and Y. Gefen ,
“Null weak values in multi-level systems”,
[Physica Scripta T151, 014014 \(2012\)](#) [[arXiv: 1304.1640](#)].
Peer-reviewed proceeding.
Contribution: Main theory analysis, data analysis, wrote the paper.
- [P16] Y. E. Kraus, Z. Ringel, and Oded Zilberberg,
“Four-dimensional quantum Hall effect in a two-dimensional quasicrystal”,
[Phys. Rev. Lett. 111, 226401 \(2013\)](#) [[arXiv: 1302.2647](#)].
Contribution: Alphabetical order, Initiated the idea, theory analysis, wrote the paper.
- [P17] M. Verbin, Oded Zilberberg, Y. E. Kraus, Y. Lahini, and Y. Silberberg,
“Observation of topological phase transitions in photonic quasicrystals”,
[Phys. Rev. Lett. 110, 076403 \(2013\)](#) (Editor’s choice) [[arXiv: 1211.4476](#)].
Contribution: Initiated the idea, main theory analysis, wrote the paper.

- [P18] Oded Zilberberg, A. Romito, D. J. Starling, G. A. Howland, C. J. Broadbent, J. C. Howell, and Y. Gefen ,
“Null values and quantum state discrimination”,
[Phys. Rev. Lett. 110, 170405 \(2013\)](#) [[arXiv:1205.3877](#)].
Contribution: Main theory analysis, data analysis, wrote the paper.
- [P19] Y. E. Kraus and Oded Zilberberg,
“Topological equivalence between the Fibonacci quasicrystal and the Harper model”,
[Phys. Rev. Lett. 109, 116404 \(2012\)](#) [[arXiv:1204.3517](#)].
Contribution: Initiated the idea, theory analysis, wrote the paper.
- [P20] G. Campagnano, Oded Zilberberg, I. V. Gornyi, D. E. Feldman, A. C. Potter, and Y. Gefen ,
“Hanbury-Brown and Twiss interference of anyons”,
[Phys. Rev. Lett. 109, 106802 \(2012\)](#) [[arXiv:1204.2129](#)].
Selected for a [synopsis](#) in Physics - an APS journal highlighting exceptional research.
Contribution: Theory analysis, wrote the paper.
- [P21] Y. E. Kraus, Y. Lahini, Z. Ringel, M. Verbin, and Oded Zilberberg,
“Topological states and adiabatic pumping in quasicrystals”,
[Phys. Rev. Lett. 109, 106402 \(2012\)](#) [[arXiv:1109.5983](#)].
Selected for a viewpoint in [Physics 5, 99 \(2012\)](#) - an APS journal highlighting exceptional research.
Selected as a research highlight in [Science 338, 444 \(2012\)](#) and [Nat. Phys. 8, 702 \(2012\)](#).
It has also featured in [physicsworld](#) and has an invited article in [2Physics](#).
Contribution: Alphabetical order, Initiated the idea, theory analysis, wrote the paper.
- [P22] Oded Zilberberg, A. Romito, and Y. Gefen,
“Charge sensing amplification via weak values measurement”,
[Phys. Rev. Lett. 106, 080405 \(2011\)](#) [[arXiv:1009.4738](#)].
Contribution: Main theory analysis, wrote the paper.
- [P23] Oded Zilberberg, B. Braunecker, and D. Loss,
“CNOT for multi-particle qubits and topological quantum computation based on parity measurements”,
[Phys. Rev. A 77, 012327 \(2008\)](#) [[arXiv:0708.1062v2](#)] .
Contribution: Main theory analysis, wrote the paper.
- [P24] L. Genovese, A. Neelov, S. Goedecker, T. Deutsch, S. A. Ghasemi, A. Willand, D. Caliste,
Oded Zilberberg, M. Rayson, A. Bergman, R. Schneider,
“Daubechies wavelets as a basis set for density functional pseudopotential calculations”,
[J. Chem. Phys. 129, 014109 \(2008\)](#) [[arXiv:0804.2583](#)].

2. Contributions to books

- [A1] Oded Zilberberg, A. Romito, and Y. Gefen,
“Standard and Null Weak Values”,
Festschrift in honor of Yakir Aharonov’s 80th birthday
“Quantum Theory: A Two-Time Success Story” [[arXiv: 1304.1642](https://arxiv.org/abs/1304.1642)].

3. Other relevant publications

- [A2] M. Verbin, Y. E. Kraus, Oded Zilberberg, Y. Lahini, and Y. Silberberg,
“Topological Phase Transitions in Photonic Quasicrystals”,
Proceedings of the Rochester Conferences on Coherence and Quantum Optics and the Quantum Information and Measurement meeting, OSA Technical Digest (online)
(Optical Society of America, 2013),
[paper M6.52](#).
- [A3] M. Verbin, Y. E. Kraus, Y. Lahini, Z. Ringel, Oded Zilberberg, and Y. Silberberg,
“Experimental Observation of Topological States and Adiabatic Pumping in 1D Photonic Quasicrystals”,
Proceedings of Frontiers in Optics 2011/Laser Science XXVII, OSA Technical Digest
(Optical Society of America, 2011),
[paper PDPC1](#).
- [A4] Hannah M. Price, Tomoki Ozawa, Nathan Goldman, Oded Zilberberg, and Iacopo Carusotto,
“Towards four-dimensional photonics”,
Proceedings of the Advances in Photonics of Quantum Computing, Memory, and Communication IX
conference (Optical Society of America, 2015),
[paper 97620V](#).