

Curriculum Vitae – Raam Uzdin

Sep 2, 2018

1. Personal Details:

- First and last name: Raam Uzdin
- Email: raam@mail.huji.ac.il
- Family status: Married

2. Higher Education and positions:

- 1996–2000, Technion, BSc. in Electrical Engineering
 - Resulting publications: [1,2] in the attached publication list.
- 2001–2002, Technion, MSc. in Physics., (Nonlinear Optics)
 - Supervisor: Prof. Mordechai Segev
 - Resulting publications: [3-6]
- 2008–2012, Technion, PhD in Physics, (Degeneracies in lossy systems)
 - Supervisor: Prof. Nimrod Moiseyev
 - Resulting publications: [7-16]
- 2013, Hebrew university, Postdoc (Driven nonlinear Oscillators)
 - Host: Prof. Lazar Friedland (collaboration with Dr. Omri Gat)
 - Resulting publications: [17-19]
- 2014 – 2016, Hebrew university, Postdoc (Quantum Thermodynamics)
 - Host: Prof. Ronnie Kosloff
 - Resulting publications: [20-25]
- 2016 – 2018, Technion, Research Associate (Quantum Thermodynamics)
 - Host: Dr. Saar Rahav
 - Resulting publications: [26,28]
- 2018- now, The Hebrew University of Jerusalem (Quantum Thermodynamics)
 - Principle Investigator

3. Service in other Academic and Research Institutions:

Short-term positions abroad (1-3 months due to family circumstances)

- 2012 – One month, ITAMP (Harvard-Smithsonian Inst. for Theoretical Atomic, Optical, and Molecular Physics) Boston, Postdoc
 - Resulting publications: [16]
- 2015 – Three months, Oxford University, Academic visitor (sponsored)
 - Host and sponsor: Prof. Ian Walmsley
 - Resulting publications: [23, arXiv: 1610.02671]
 - Collaborator in the Walmsley group: Dr. Eilon Poem

- 2016 – Two months, Maryland University, Postdoc
 - Host: Prof. Christopher Jarzynski
 - Resulting publication: [24,26]

4. Other Activities:

- Co-organizer of the conference: “Non-Hermitian Degeneracies: new directions of research and applications” 22-24 April 2012, Haifa, Israel. <http://phevents.technion.ac.il/2012-april-22>
- Member of the scientific committee of the conference “5th Quantum Thermodynamics Conference” 13-17 March 2017 Oxford, UK. <https://qtd5.sciencesconf.org/>

5. Honors and prizes awarded

- BSc:
 - Summa cum laude
- MSc:
 - Wolf prize for MSc students
- Army
 - MAFAT prize for creative thinking
- PhD:
 - Wolf prize for PhD students
 - Jacobs I
 - Jacobs II
 - Zeff
- Postdoc:
 - Lady Davies
 - Hebrew university prize for postdoc (via Lady Davies)

6. Participation in Scientific Conferences, Lectures, and Other Activity:

Seminars (universities) and lectures (conferences)

1. Conference on Lasers and Electro-Optics (CLEO) USA, May 2001
2. Nonlinear Guided Waves (NLGW), Italy, Sep 2002
3. Resonance Phenomena and their Applications, Technion, June 2010
4. The physics of Exceptional Points, National Institute for theoretical physics - South Africa, Nov 2010
5. Non-Hermitian Degeneracies: new directions of research and applications Apr 2012, Technion. (co-organizer with Prof. Moiseyev)
6. Thermodynamics of Quantum devices, Maagan Israel, Mar 2013
7. Bat-Sheva de Rothschild Seminar on light-matter interaction, Israel, Apr 2013
8. Seminar, the Hebrew university, Apr 2013
9. Quantum Roundabout, Nottingham University Jun 2014

10. Quantum Thermodynamics – COST action MP1209, Queen’s University Belfast, Aug 2014
11. Seminar, Technion, Jan 2015
12. Seminar, Oxford, UK, Jan 2015
13. Seminar, Bristol, UK, Jan 2015
14. Workshop on Quantum Information and Thermodynamics, Sao Paulo, Brazil, Feb 2015
15. COSTMP1209 – The 2nd Quantum Thermodynamics Conference, Palma de Mallorca, April 2015
16. Seminar, Bristol, UK, Sep 2015
17. Seminar, Oxford, UK, Sep 2015
18. Seminar, Imperial College, London, Oct 2015
19. Seminar, University of Texas, Austin Apr 2016
20. Seminar, University of Maryland, Apr 2016
21. Invited talk, COSTMP1209 - The 4th Quantum Thermodynamics Conference, Erice May 2016.
22. Seminar, ETH Switzerland, Aug 2016
23. JETC 2017 Budapest, May 2017
24. CQS 2017, Cartagena, Spain, May 2017.
25. Seminar, Ulm university, July 2017
26. Seminar, Max Planck Munich (Garching - MPQ), Aug 2017
27. Seminar, ICFO Barcelona, Sep 2017
28. Seminar, Queen’s University Belfast, Sep 2017
29. Invited talk, Workshop on Quantum Thermodynamics, Harvard, Boston Nov 2017
30. Seminar, Los Alamos National Labs, New Mexico, Nov 2017
31. Seminar, University of New Mexico, Nov 2017
32. Invited talk, PQE 2018, Snowbird Utah, Jan 2018

Publications - Raam Uzdin

2001

1. V Mikhelashvili, G Eisenstein, **R Uzdin**,
'Extraction of Schottky diode parameters with a bias dependent barrier height',
Solid-State Electronics 45 , 143 (2001)
2. **R. Uzdin**, G.J. Salamo and M. Segev,
'Theory of self-focusing in photorefractive InP'
Optics Letters 26, 1547 (2001)
3. T. Carmon, **R. Uzdin**, C. Pigier, Z. H. Musslimani, M. Segev, and A. Nepomnyashchy,
'Rotating Propeller Solitons'
Phys. Review Lett. 87, 143901 (2001)
4. C. Pigier, **R. Uzdin**, T. Carmon, M. Segev, A. Nepomnyashchy , and Z. H. Musslimani,
'Collisions between (2+1)D rotating propeller solitons'
Optics Letters 26, 1577 (2001)
5. T Schwartz, Y Ganor, T Carmon, **R Uzdin**, S Shwartz, M Segev, and U El-Hanany,
'Photorefractive solitons and light-induced resonance control in semiconductor CdZnTe'
Optics letters 27, 1229 (2001)

2002

6. O. Cohen, **R. Uzdin**, T. Carmon, J. W. Fleischer, M. Segev, and S. Odoulov,
'Collisions between Optical Spatial Solitons Propagating in Opposite Directions '
Phys. Rev. Lett. 89, 133901 (2002)

2010

7. **R. Uzdin** and N. Moiseyev
'Classical harmonic generation in rare gases'
Phys. Rev. A 81, 063405 (2010)
8. **R. Uzdin**,
'Calculation of HHG spectrum and Floquet resonance states using the dynamical symmetry'
Phys. Rev. A 81, 063429 (2010)
9. **R.Uzdin** and R Lefebvre,
'Finding and pinpointing exceptional points of an open quantum system'
J. Phys. B 43, 235004 (2010)

2011

10. **R. Uzdin**, A Mailybaev and N. Moiseyev,
'On the Observability and Asymmetry of Adiabatic State Flips Generated by Exceptional Points'
J. Phys. A 44, 435302 (2011)
11. **M.V. Berry** and **R. Uzdin**,
'Slow nonhermitian cycling: exact solutions and the Stokes phenomenon'
J. Phys. A 44, 435303 (2011)

2012

12. **R. Uzdin** and N. Moiseyev,
'Scattering From a Waveguide by Cycling a Non-Hermitian degeneracy'
Phys. Rev. A 85, 031804(R) (2012) Rapid Communication
13. **R. Uzdin** and N. Moiseyev,
'Rapid azimuthal rotation in the Hermitian and non-Hermitian Landau-Zener problem'
J. Phys. A 45, 444033 (2012)
14. **R. Uzdin**, U. Günther· S. Rahav and N. Moiseyev (2012),
'Time-dependent Hamiltonians with 100% evolution speed efficiency'
J. Phys. A 45, 415304 (2012)

2013

15. **R. Uzdin**,
'Resources needed for non-unitary quantum operations'
J. Phys. A 46, 145302 (2013)
16. **R. Uzdin**, E G. Dalla Torre· R. Kosloff ^{PI}, and N. Moiseyev (2013), 'Effects of an exceptional point on the dynamics of a single particle in a time-dependent harmonic trap'
Phys. Rev. A 88, 022505 (2013)
17. **R. Uzdin**, and O. Gat,
'Time-energy trade-off in unambiguous-state-discrimination positive operator-valued measures'
Phys. Rev. A 88, 052327 (2013)

2014

18. **R. Uzdin**, O. Gat and L. Friedland,
'The first harmonic approximation in nonlinear chirped-driven oscillators'
Phys. Rev. E 89, 012902 (2014)
19. **R. Uzdin**,
'The role of singular values in single copy entanglement manipulations and unambiguous state discrimination'
J. Phys. A 47, 165301 (2014),
20. **R. Uzdin**, and R. Kosloff,
'The multilevel four-stroke swap engine and its environment'
New J. Phys. 16, 095003 (2014)

21. **R. Uzdin**, and R. Kosloff,
'Universal features in the efficiency at maximal work of hot quantum Otto engines',
Europhys. Lett. 108, 40001 (2014)

2015

22. **R. Uzdin**, A Levy and R. Kosloff,
'Equivalence of Quantum Heat Machines, and Quantum-Thermodynamic Signatures',
Phys. Rev. X 5, 031044 (2015)

2016

23. **R. Uzdin**, A Levy and R. Kosloff,
'Quantum heat machines equivalence, work extraction beyond markovianity, and strong coupling via heat exchangers',
Entropy 18, 124 (2016)
24. **R. Uzdin**,
'Coherence-Induced Reversibility and Collective Operation of Quantum Heat Machines via Coherence Recycling',
Physical Review Applied 6, 024004 (2016)
25. **R. Uzdin**, and R. Kosloff,
'Speed limits in Liouville space for open quantum systems',
Europhys. Lett. 115, 40003 (2016)

2017

26. **R. Uzdin**,
'Additional energy-information relations in thermodynamics of small systems',
Phys. Rev. E 96, 032128 (2017)

2018

27. **R. Uzdin**, R. Kosloff, S. Gasparinetti, and R. Ozeri
'Markovian heat sources with the smallest heat capacity'
New. J. Phys. , 20: 063030 (2018)
28. **R. Uzdin**, and Saar Rahav
'Global passivity in microscopic thermodynamics'
In review in Phys. Rev. X 8, 021064 (2018)

In review:

29. J. Klatzow, J. N. Becker, P. M. Ledingham, C. Weinzetl, K. T. Kaczmarek, D. J. Saunders, J. Nunn, I. A. Walmsley, **R. Uzdin**, and E. Poem
'Experimental demonstration of quantum effects in the operation of microscopic heat engines'
arXiv :1710.08716

Recommended reading: [28,22,27,26,29,24,10,12,17,23,25]

Chapters in Collections:

“Thermodynamics at the quantum regime” volume in
“Frontiers of Physics”, Springer

Raam Uzdin, Chapter Name: “***The Clausius inequality and its generalizations in
small quantum systems***”

Coauthors: none.

In preparation – Scheduled for publication in 2018