

# Hadas Soifer

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Tel Aviv University  
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## Current position

Senior Lecturer (equivalent to Assistant Prof. in the US), Tel Aviv University, School of Physics and Astronomy.

## Education

Ph.D., *direct track*, Physics, Department of physics of complex systems, Weizmann Institute of Science, Rehovot, Israel, 2009 - 2014

Supervisor: Dr. Nirit Dudovich

Title: "*From measurement to control of attosecond dynamics via high harmonic generation*"

M.Sc., Physics, Department of physics of complex systems, Weizmann Institute of Science, Rehovot, Israel, 2007-2009

Supervisor: Dr. Nirit Dudovich

Thesis: "*Time resolved measurements in the attosecond regime*"

BA, Physics, Technion, Haifa, Israel, 2003-2006

## Experience

**2019 – Present** Senior Lecturer, Tel Aviv University, School of Physics and Astronomy.

**2014 – 2019** Postdoctoral Fellow, Stanford and SLAC, California

- Ultrafast time- and angle resolved photoemission studies (trARPES)
- Focus on topological materials: topological insulators and Weyl semimetals

**2007 – 2014** M.Sc and Ph.D. student, Weizmann Institute of Science, Israel

- High Harmonic Generation (HHG) in atomic and molecular gases
- Attosecond- time-resolved studies of strong-field induced electron dynamics in atoms and molecules

**2006 – 2007** CISCO, programmer

**2005 – 2006** Technion, Physics department, research assistant in the lab of Prof. Uri Sivan

**2000 – 2003** Military service in the "Haman-Talpiot" track

## Awards and Honors

**Zuckermann Faculty Scholar**, 2019

**Weizmann Institute National Postdoctoral Award for Women in Science**, 2014

**Dean's Prize for PhD students**, Weizmann, 2014

**Fulbright postdoctoral fellowship**, 2014

**Rothschild postdoctoral fellowship**, 2014

Selected to give Weizmann's physics faculty '**Student Colloquium**', 2014

**Adams Scholarship** for PhD students, 2011-2014

BA, **Graduation Summa Cum Laude**, 2007

Student in the Technion's **Chais Excellence Program**, 2003-2006

'**Dean's list**' during BA 2006

'**President's list**' during BA 2005

'**President's list**' during BA 2004

## Peer-reviewed Publications

1. H. Pfau, **H. Soifer**, J. A. Sobota, A. Gauthier, C. R. Rotundu, J. C. Palmstrom, I. R. Fisher, G.-Y. Chen, H.-H. Wen, Z.-X. Shen, P. S. Kirchmann, "*Low work function in the 122-family of iron-based superconductors*", Phys. Rev. Materials, **In press** (2020).
2. A. J. Uzan, **H. Soifer**, O. Pedatzur, A. Clergerie, S. Larroque, Z. Masin, B. D. Bruner, B. Pons, M. Yu. Ivanov, O. Smirnova, and N. Dudovich, "*Spatial molecular interferometry via multidimensional high harmonic spectroscopy*", Nat. Photons, **In press** (2019).
3. **H. Soifer**, A. Gauthier, A. F. Kemper, C. R. Rotundo, S.-L. Yang, H. Xiong, D. Lu, M. Hashimoto, P. S. Kirchmann, J. A. Sobota, Z.-X. Shen, "*Band resolved imaging of photocurrent in a topological insulator*", Phys. Rev. Lett., **122**, 167401 (2019).
4. S.-L. Yang, J. A. Sobota, Y. He, D. Leuenberger, **H. Soifer**, H. Eisaki, P. S. Kirchmann, and Z.-X. Shen, "*Mode-Selective Coupling of Coherent Phonons to the Bi2212 Electronic Band Structure*", Phys. Rev. Lett. **122**, 176403 (2019).
5. D. Faccialà, S. Pabst, B. Bruner, A. Ciriolo, M. Devetta, M. Negro, P. Prasanna Geetha, A. Pusala, **H. Soifer**, N. Dudovich, S. Stagira, C. Vozzi, "*High-Order Harmonic Generation Spectroscopy by Recolliding Electron Caustics*", J. Phys. B, **51**, 134002 (2018).
6. S.-L. Yang, J. A. Sobota, Y. He, Y. Wang, D. Leuenberger, **H. Soifer**, M. Hashimoto, D. H. Lu, H. Eisaki, B. Moritz, T. P. Devereaux, P. S. Kirchmann, and Z.-X. Shen, "*Revealing the Coulomb interaction strength in a cuprate superconductor*", Phys. Rev. B, **96**, 245112 (2017).
7. S. Gerber\*, S.-L. Yang\*, D. Zhu, **H. Soifer**, J. A. Sobota, S. Rebec, J. J. Lee, T. Jia, B. Moritz, C. Jia, A. Gauthier, Y. Li, D. Leuenberger, Y. Zhang, L. Chaix, W. Li, H. Jang, J.-S. Lee, M. Yi, G. L. Dakovski, S. Song, J. M. Glowia, S. Nelson, K. W. Kim, Y.-D. Chuang, Z. Hussain, R. G. Moore, T. P. Devereaux, W.-S. Lee, P. S. Kirchmann, Z.-X. Shen, "*Femtosecond electron-*

*phonon lock-in by photoemission and x-ray free-electron laser*", Science, **357**, 71-75 (2017).

8. H. Xiong, J. A. Sobota, S.-L. Yang, **H. Soifer**, A. Gauthier, M.-H. Lu, Y.-Y. Lv, S.-H. Yao, D. Lu, M. Hashimoto, P. S. Kirchmann, Y.-F. Chen, Z.-X. Shen, "*3D nature of ZrTe<sub>5</sub> band structure measured by high-momentum-resolution photoemission spectroscopy*", Phys. Rev. B, **95**, 195119 (2017).  
\*\* Editor's choice
9. D. Faccialà, S. Pabst, B. D. Bruner, A. G. Ciriolo, S. De Silvestri, M. Devetta, M. Negro, **H. Soifer**, S. Stagira, N. Dudovich and Caterina Vozzi, "*Probe of Multi-electron Dynamics in Xenon by Caustics in High Order Harmonic Generation*", Phys. Rev. Lett. **117**, 093902 (2016).
10. B. D. Bruner, Z. Mašín, M. Negro, F. Morales, D. Brambila, M. Devetta, D. Faccialà, A. G. Harvey, M. Ivanov, Y. Mairesse, S. Patchkovskii, V. Serbinenko, **H. Soifer**, S. Stagira, C. Vozzi, N. Dudovich and O. Smirnova, "*Multidimensional high harmonic spectroscopy of polyatomic molecules: detecting sub-cycle laser-driven hole dynamics upon ionization in strong mid-IR laser fields*", Faraday Discuss. (2016)
11. A. Ferré, **H. Soifer**, O. Pedatzur, C. Bourassin-Bouchet, B. D. Bruner, R. Canonge, F. Catoire, D. Descamps, B. Fabre, E. Mével, S. Petit, N. Dudovich, and Y. Mairesse, "*Two-Dimensional Frequency Resolved Optomolecular Gating of High-Order Harmonic Generation*", Phys. Rev. Lett. **116**, 053002 (2016).
12. O. Pedatzur, G. Orenstein, V. Serbinenko, **H. Soifer**, B. D. Bruner, A. Uzan, D. Brambila, A. Harvey, L. Torlina, F. Morales, O. Smirnova, and N. Dudovich, "*Attosecond Tunneling Interferometry*", Nat. Phys. **11**, 815-819 (2015).
13. B. D. Bruner, **H. Soifer**, D. Shafir, V. Serbinenko, O. Smirnova and N. Dudovich, "*Multidimensional high harmonic spectroscopy*", J. Phys. B: At. Mol. Opt. Phys. **48** 174006 (2015).
14. A. Ferré, A. E. Boguslavskiy, M. Dagan, V. Blanchet, B.D. Bruner, F. Burgy, A. Camper, D. Descamps, B. Fabre, N. Federov, J. Gaudin, G. Geoffroy, J. Mikosch, S. Patchkovskii, S. Petit, T. Ruchon, **H. Soifer**, D. Staedter, I. Wilkinson, A. Stolow, N. Dudovich and Y. Mairesse, "*Multi-channel electronic and vibrational dynamics in polyatomic resonant high-order harmonic generation*", Nat. Comms., **6**, 5952 (2015).
15. **H. Soifer**, B. D. Bruner, M. Negro, M. Devetta, D. Facciala, C. Vozzi, S. de Silvestri, S. Stagira and N. Dudovich, "*Studying the universality of field induced tunnel ionization times via high-order harmonic spectroscopy*", J. Phys. B, **47**, 24029 (2014).
16. A. Ferré, D. Staedter, F. Burgy, M. Dagan, D. Descamps, N. Dudovich, S. Petit, **H. Soifer**, V. Blanchet, and Y. Mairesse, "*High-order harmonic transient grating spectroscopy of SF<sub>6</sub> molecular vibrations*", J. Phys. B, **47**, 124023 (2014)
17. A. Artzy-Schnirman, E. Abu-Shah, M. Dishon, **H. Soifer**, Y. Sivan, Y. Reiter, I. Benhar and U. Sivan, "*On the limited recognition of inorganic surfaces by short peptides compared with antibodies*", J. Peptide Sci. **20**, 446-450 (2014)

18. D. Shafir, **H. Soifer**, C. Vozzi, A. S. Johnson, A. Hartung, Z. Dube, D. M. Villeneuve, P. B. Corkum, N. Dudovich, and A. Staudte, "*Trajectory-Resolved Coulomb Focusing in Tunnel Ionization of Atoms with Intense, Elliptically Polarized Laser Pulses*", Phys. Rev. Lett. **111**, 023005 (2013)
19. **H. Soifer**, M. Dagan, D. Shafir, B. D. Bruner, M. Y. Ivanov, V. Serbinenko, I. Barth, O. Smirnova, and N. Dudovich, "*Spatio-spectral analysis of ionization times in high-harmonic generation*", Chem. Phys. **414**, 176 (2013).
20. D. Shafir\*, **H. Soifer\***, B. D. Bruner, M. Dagan, Y. Mairesse, S. Patchkovskii, M. Y. Ivanov, O. Smirnova, and N. Dudovich, "*Resolving the time when an electron exits a tunnelling barrier*", Nature **485**, 343 (2012).  
\* **Equal contribution**
21. D. Shafir, B. Fabre, J. Higuette, **H. Soifer**, M. Dagan, D. Descamps, E. Mével, S. Petit, H. Wörner, B. Pons, N. Dudovich, and Y. Mairesse, "*Role of the Ionic Potential in High Harmonic Generation*", Phys. Rev. Lett. **108**, 203001 (2012).
22. **H. Soifer**, P. Botheron, D. Shafir, A. Diner, O. Raz, B. D. Bruner, Y. Mairesse, B. Pons, and N. Dudovich, "*Near-Threshold High-Order Harmonic Spectroscopy with Aligned Molecules*", Phys. Rev. Lett. **105**, 143904 (2010).
23. A. Artzy Schnirman, E. Zahavi, **H. Yeger**, R. Rosenfeld, I. Benhar, Y. Reiter and U. Sivan, "*Antibody Molecules Discriminate between Crystalline Facets of a Gallium Arsenide Semiconductor*", Nano Lett. **6**, 1870-1874 (2006).

## Oral presentations

- *Invited* - New Generation in Strongly Correlated Electron Systems, Sliema, Malta 2020 (Scheduled, Sep. 7<sup>th</sup>).
- *Invited* – Discussion leader - GRC on Multiphoton Processes, Bryant University, Smithfield, US 2020 (Scheduled, June 15<sup>th</sup>).
- *Invited* - Zuckerman Symposium, Rehovot, Israel 2019.
- Paris Ultrafast Conference, Paris, France 2019.
- *Invited* - CMP seminar, UC Davis, Davis, US 2018.
- *Invited* - CMP seminar, Caltech, Pasadena, US 2018.
- ALS-CXRO Seminar, LBNL, Berkeley, US 2017.
- APS March Meeting, New Orleans, US 2017.
- Seminar at the group of David Reis, SLAC, Menlo Park, US 2017.
- Photon Science Seminar, SLAC, Menlo Park, US 2015.
- CMP seminar, Caltech, Pasadena, US 2014.
- CFEL seminar, MPI for the Structure and Dynamics of Matter, Hamburg, Germany 2014.
- Ultrafast Phenomena XVIII, Lausanne, Switzerland 2012.
- Seminar at the group of Franz Kartner, MIT, Boston, US 2012.
- Seminar at the group of Keith Nelson, MIT, Boston, US 2012.
- Seminar, CELIA, Bordeaux university I, Bordeaux, France 2011.

- IPS conference, Tel-Aviv, Israel 2010.
- Seminar, NRC, Ottawa, Canada, 2010.

### **Poster presentations**

- SSRL/LCLS Users meeting, CA, USA, 2016.
- Ultrafast processes in correlated electron systems – Gordon conference, CA, USA, 2014.
- Multiphoton Processes – Gordon conference, NH, USA, 2012.
- ATTO03, Hokaido, Japan, 2010.
- Multiphoton Processes - Gordon conference, NH, USA, 2010.

### **Service**

Referee for Physical Review Letters, Nature Comms.

Referee for Fulbright Junior Advanced Research Award.

Organiser of AMO seminar at Weizmann Institute (2012).