

# Ella Orion Lachman, Ph.D.

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🌐 <http://ellachman.github.io/>

## Education

- 2012 – 2017    **Ph.D., Weizmann Institute of Science, Israel** in Condensed Matter Physics.  
Thesis title: *Study of magnetically doped topological insulators using a scanning SQUID-On-Tip microscope*  
Advisor: Prof. Eli Zeldov
- 2009 – 2012    **M.Sc. Physics, Weizmann Institute of Science, Israel**  
Thesis title: *Study of Vortex Dynamics in Type-II Superconductors by SOT microscopy*.  
Advisor: Prof. Eli Zeldov
- 2006 – 2009    **B.Sc. Physics and Chemistry (Exact-Sciences program), Hebrew University of Jerusalem, Israel.**  
*magna cum lauda*

## Employment History

- 2017 – present    **Postdoctoral researcher.** Quantum Materials Laboratory, UC Berkeley.
- 2016 – 2017    **Contributing writer.** Davidson Institute's website:  
<http://davidson.weizmann.ac.il/> (student position).
- 2011 – 2012    **Visitors' guide.** Clore Garden of Science, Weizmann Institute of Science (student position).
- 2008 – 2009    **Student Position.** Hebrew University of Jerusalem  
Advisor: Prof. Uri Banin  
Research topic: *Microscopy and Spectroscopy of fluorescent single nano particles.*

## Research Publications

### Journal Articles

- 1    **Lachman, E.**, Mogi, M., Sarkar, J., Uri, A., Bagani, K., Anahory, Y., ... Zeldov, E. (2017, December). Observation of superparamagnetism in coexistence with quantum anomalous Hall  $C = \pm 1$  and  $C = 0$  Chern states. *npj Quantum Materials*, 2(1), 70.  
doi:10.1038/s41535-017-0072-1
- 2    Embon, L., Anahory, Y., Jelić, Ž., **Lachman, E.**, Myasoedov, Y., Huber, M. E., ... Zeldov, E. (2017, July). Imaging of super-fast dynamics and flow instabilities of superconducting vortices. *Nature Communications*, 8(1), 85. doi:10.1038/s41467-017-00089-3. arXiv: 1706.00628
- 3    Uri, A., Meltzer, A. Y., Anahory, Y., Embon, L., **Lachman, E.**, Halbertal, D., ... Zeldov, E. (2016, November). Electrically Tunable Multiterminal SQUID-on-Tip. *Nano Letters*, 16(11), 6910–6915. doi:10.1021/acs.nanolett.6b02841. arXiv: 1606.05088
- 4    **Lachman, E.**, Young, A. F., Richardella, A., Cuppens, J., Naren, H. R., Anahory, Y., ... Zeldov, E. (2015, November). Visualization of superparamagnetic dynamics in magnetic

topological insulators. *Science Advances*, 1(10), e1500740–e1500740.  
doi:10.1126/sciadv.1500740



- 5 Finkler, A., Vasyukov, D., Segev, Y., Ne'eman, L., **Lachman, E.**, Rappaport, M. L., ... Huber, M. E. (2012, July). Scanning superconducting quantum interference device on a tip for magnetic imaging of nanoscale phenomena. *The Review of scientific instruments*, 83(7), 073702. doi:10.1063/1.4731656
- 6 Yoskovitz, E., Menagen, G., Sitt, A., **Lachman, E.**, & Banin, U. (2010, August). Nanoscale Near-Field Imaging of Excitons in Single Heterostructured Nanorods. *Nano Letters*, 10(8), 3068–3072. doi:10.1021/nl101614s

## Seminars and Talks

### Invited Talks

- Dec 2015     **The Israel Physical Society Conference 2015, (BIU, Israel)**, Visualization of superparamagnetic dynamics in magnetic topological insulators.




### Seminars

- Mar 23<sup>rd</sup> 2016     **GLAM Special Seminar, (Stanford, USA)**, SQUID-On-Tip microscopy of magnetically doped topological insulators.
- Oct 19<sup>th</sup> 2017     **ABC...z seminar, (UC Santa Barbara, USA)**, Magnetism in magnetically doped topological insulators revealed by SQUID-On-Tip microscopy.

### Contributed talks

- Mar 2016     **American Physical Society March meeting (Baltimore, USA)**, Visualization of superparamagnetic dynamics in magnetic topological insulators.

## Skills

- Languages     Strong reading, writing and speaking competencies for English, Hebrew.
- Experimental     Micropipette handling and SQUID-On-Tip fabrication, Design and automation of experiments (LabView), Data Analysis (MatLab), Arduino programming and interfacing with chip evaluation boards
- 3D part design     table-top scale (SPM system), high precision mm sized parts for CNC fabrication, micron-sized sample masks for e-beam and optical lithography.

## Extra Curricular

-  A member of the Israeli Physics Society (since 2012).
-  A member of the American Physics Society (since 2015).
-  Co-organizer, Weizmann Condensed Matter student journal club (2014).
-  Fellow physicist (former Editor) at “Mada Gadol Baktana”, the largest independent science outreach group in Israel. <http://lbscience.org/>
-  Zeldov Group blog: [ezlablog.tumblr.com](http://ezlablog.tumblr.com), <https://www.facebook.com/groups/ezlab/>
-  Member of the Weizmann Institute's theater ensemble (2015-2017)