

# YONIT HOCHBERG

## CURRICULUM VITAE

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### Office address:

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Katamon, Jerusalem, Israel  
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### Personal Data

Female. Married plus 1. Citizen of Israel and USA. Native speaker of English and Hebrew.

### Employment

- 2017- Racah Institute of Physics, Hebrew University of Jerusalem, Senior Lecturer (Assistant Professor)
- 2016 - 2017 Cornell University, LHC Theory Initiative Postdoctoral Fellow
- 2013 - 2016 Berkeley Center for Theoretical Physics, University of California, Berkeley and Lawrence Berkeley National Laboratory, Postdoctoral Fellow

### Education

- 2008 - 2013 Weizmann Institute of Science, Ph.D. Studies, Physics  
Thesis: *Probing New Physics Beyond the Standard Model: Supersymmetry, Flavor and the LHC*  
Thesis advisors: Prof. Micha Berkooz and Prof. Yosef Nir
- 2005 - 2008 Weizmann Institute of Science, M.Sc., Physics  
Thesis: *Modification of Gaugino and Higgsino Masses by Higher-Dimensional Operators in Anomaly Mediation*  
Thesis advisors: Prof. Micha Berkooz and Prof. Yosef Nir
- 2001 - 2005 Technion—Israel Institute of Technology, B.Sc., Electrical Engineering, *summa cum laude*

### Professional Experience

- 2008 - 2012 Weizmann Physics Department, Teaching Assistant, “Quantum Mechanics II”.
- 2005 Omnicell Inc., USA, Hardware Engineering Internship. Research and development of hardware prototypes targeting patient safety and operational efficiency in healthcare facilities.

### National Service

- 2000 - 2001 The Feuerstein International Institute for the Advancement of Learning Abilities, Jerusalem, Assistant Teacher and Counselor. Responsible for the education and provision of psychological and physical support to a group of eight severely disabled teenagers and young adults at this special-education institute.

## Honors and Awards

Azrieli Foundation Faculty Fellowship, 2017-2020  
LHC Theory Initiative Fellowship, 2016-2018  
Block Prize, Aspen Center for Physics, 2014  
Israel National Postdoctoral Award for Advancing Women in Science, 2013-2014  
Rothschild Fellowship, Yad Hanadiv Foundation, 2013-2014  
Chorafas Foundation Prize, 2013  
Pappalardo Fellowship, MIT, 2013 (declined)  
Wolf Foundation Fellowship for Outstanding Ph.D. Students, 2011  
Feinberg Graduate School Dean's Excellence Award, Weizmann Institute of Science, 2008  
President's Honors, Technion—Israel Institute of Technology, 2002-03, 2004-05  
Dean's Honors, Technion—Israel Institute of Technology, 2001-02, 2002-03, 2003-04, 2004-05  
Foundation for Jerusalem Technion Students Fellowships, 2001-02, 2002-03, 2003-04, 2004-05  
Israel Ministry of Science and Technology Fellowship for the Advancement of Women in Science and Technology, 2004-05  
Bank Hapoalim Fellowship for Excellence, 2004

## Selected Talks

Apr. 2018      *Direct searches for light dark matter*, Workshop, *Dark Matter at the Dawn of Discovery?*, Heidelberg, Germany

Jan. 2018      *The Dark Side*, Israel Joint Theory Seminar 50 year celebration, Weizmann Institute, Israel

Aug. 2017      *New ways to search for light dark matter*, Workshop, *Developing New Tools for Dark Matter Searches*, Aspen, Colorado, USA

Jun. 2017      *Dark Spectroscopy*, Workshop, *The TeV Scale: A Threshold to New Physics?*, MITP, Mainz, Germany

Dec. 2016      *Superconducting detectors for superlight dark matter*, Workshop, *sub-eV*, LBNL, Berkeley, California, USA

Nov. 2016      *New Directions for Light Dark Matter Detection*, LNS Colloquium, MIT, Boston, USA

Oct. 2016      *Light Dark Matter*, Workshop, *Rising Stars in Physics*, MIT, Boston, USA

Aug. 2016      *A Light Dark Side*, Workshop, *Current Themes in High Energy Physics and Cosmology*, Niels Bohr Institute, Copenhagen, Denmark

Mar. 2016      *Superconducting detectors for super light dark matter*, Berkeley week at IPMU, Institute for Physics and Mathematics of the Universe, Japan

Mar. 2016      *Superconducting detectors for super light dark matter*, Bay Area Particle Theory Meeting, San Francisco, California, USA

Oct. 2015      *Superconducting detectors for super light dark matter*, Conference, *Gearing up for LHC13*, Galileo Galilei Institute, Florence, Italy

Aug. 2015      *Superconducting detectors for super light dark matter*, Workshop, *New Directions to Shed Light on Dark Matter*, Aspen, Colorado, USA

Dec. 2014      *The SIMP(lest) Miracle*, meeting of the I-CORE center *The Quantum Universe*, Jerusalem, Israel

- Sep. 2014 *The SIMP(lest) Miracle*, Workshop, *Physics from Run 2 of the LHC*, Jeju, Korea
- Jun. 2014 *Two Higgs doublet model with minimal flavor violation*, Workshop, *Connecting Flavor Physics with Naturalness: from Theory to Experiment*, Aspen, Colorado, USA
- Jan. 2014 *Higgs flavor physics*, Workshop, *Frontiers in Particle Physics: From Dark Matter to the LHC and Beyond*, Aspen, Colorado, USA
- Apr. 2013 *The interplay of flavor and collider*, Joint High Energy Theory Seminar, Israel
- Jul. 2012 *Interplay of flavor physics and collider physics*, 62nd Lindau Nobel Laureate Meeting, Germany
- Jun. 2012 *Charming new physics*, *Physics at the LHC (PLHC)* Conference, Vancouver, BC
- Feb. 2012 *From top  $A_{FB}$  to charm  $\Delta A_{CP}$* , Workshop, *Top physics and electroweak symmetry breaking in the LHC era*, Seoul, Korea
- May 2011 *Exploring scalar interpretations of AFB*, T-mini Workshop, Weizmann Institute of Science, Israel
- Dec. 2010 *Implications of the large dimuon CP asymmetry in  $B_{d,s}$  decays on minimal flavor violation with low  $\tan\beta$* , the 56th annual meeting of the Israel Physical Society
- Oct. 2009 *Inverted Sparticle Hierarchies from Natural Particle Hierarchies*, the Weizmann High Energy Physics Scientific and Academic Advisory Committee meeting
- Sep. 2009 *Inverted Sparticle Hierarchies from Natural Particle Hierarchies*, the ISF Center of Excellence meeting in String Theory, *A New Year of String Theory*, Workshop, Tel Aviv, Israel
- Dec. 2008 *Splitting the Wino Multiplet by Higher-Dimensional Operators in Anomaly Mediation*, the 54th annual meeting of the Israel Physical Society
- Nov. 2008 *Splitting the Wino Multiplet by Higher-Dimensional Operators in Anomaly Mediation*, Poster session, International Conference on Particles and Nuclei, Eilat, Israel

## Schools, Workshops and Conferences

- Apr. 2018 Workshop, *Dark Matter at the Dawn of Discovery?*, Heidelberg, Germany
- Nov. 2017 Organizer, Workshop, *BSM in direct, indirect and tabletop experiments*, SRitp, Weizmann Institute, Israel
- Aug. 2017 Workshop, *Developing New Tools for Dark Matter Searches*, Aspen, Colorado, USA
- Dec. 2016 Workshop, *sub-eV*, LBNL, Berkeley, California, USA
- Oct. 2016 Workshop, *Rising Stars in Physics*, MIT, Boston, USA
- Aug. 2016 Workshop, *Current Themes in High Energy Physics and Cosmology*, Copenhagen, Denmark
- Jun. 2016 Convener, Conference, *Fourth Annual Large Hadron Collider Physics Conference (LHCP2016)*, Lund, Sweden
- Mar. 2016 Meeting, *Berkeley week at IPMU*, Institute for Physics and Mathematics of the Universe, Japan
- Oct. 2015 Conference, *Gearing up for LHC13*, Galileo Galilei Institute, Florence, Italy
- Oct. 2015 Workshop, *Gearing up for LHC13*, Galileo Galilei Institute, Florence, Italy
- Aug. 2015 Workshop, *New Directions to Shed Light on Dark Matter*, Aspen, Colorado, USA

June 2015	Workshop, <i>Berkeley Workshop on Dark Matter Detection</i> , Berkeley, California, USA
May 2015	Workshop, <i>Beyond WIMPs: From Theory to Detection</i> , Kibbutz Hagoshrim, Israel
Sep. 2014	Workshop, <i>Physics from Run 2 of the LHC</i> , Jeju, Korea
Jun-Jul. 2014	Workshop, <i>Connecting Flavor Physics with Naturalness: from Theory to Experiment</i> , Aspen, Colorado, USA
Jan. 2013	USA ATLAS Workshop, <i>LHC Searches</i> , Berkeley, California, USA
Jan. 2013	Workshop, <i>Frontiers in Particle Physics: From Dark Matter to the LHC and Beyond</i> , Aspen, Colorado, USA
Jul. 2012	62nd Lindau Nobel Laureate Meeting, Germany
Jun. 2012	<i>Physics at the LHC (PLHC)</i> Conference, Vancouver, BC
Feb. 2012	Workshop, <i>Top physics and electroweak symmetry breaking in the LHC era</i> , Seoul, Korea
Dec. 2011	The 29th Jerusalem Winter School in Theoretical Physics, <i>Current Trends in Particle Physics and Cosmology</i> , Jerusalem, Israel
Nov. 2011	Workshop, <i>Implications of LHCb measurements and future prospects</i> , CERN, Switzerland
May 2011	<i>T-mini Workshop</i> , Rehovot, Israel
May 2011	Workshop, <i>Electroweak Baryogenesis in the Era of the LHC</i> , Rehovot, Israel
Jul. 2010	International Summer School, <i>Cargèse 2010: Physics at TeV Colliders – From Tevatron to LHC</i> , Cargèse, France
Sep. 2009	String Theory Workshop, <i>A New Year of String Theory</i> , Tel Aviv, Israel
Dec. 2008	The 26th Jerusalem Winter School in Theoretical Physics, <i>Particle Physics in the Age of the LHC</i> , Jerusalem, Israel
Nov. 2008	International Conference on Particles and Nuclei, Eilat, Israel
Jun. 2008	ESF School in High Energy Physics and Astrophysics, <i>Theory and Particle Physics: the LHC perspective and beyond</i> , Cargèse, France
Apr. 2008	String Theory Workshop, <i>String Theory - From Theory to Experiment</i> , Jerusalem, Israel
Apr. 2008	Einstein-Minerva Rapid School, pre-workshop, Rehovot, Israel
Dec. 2006	Theoretical Physics School, <i>Physics at the LHC</i> , Rehovot and Haifa, Israel

## Sample Media Coverage of Work

Newsweek, [“Move over WIMPs: New dark matter candidate can explain mysteries of the Universe”](#)  
 IFL Science, [“New Dark Matter Theory Says It’s A Type Of Particle We’ve Known About For 80 Years”](#)  
 Science Friday, [“Did Dark Matter Kill the Dinosaurs?”](#)  
 Livescience, [“Dark Pion Particles May Explain Universe’s Invisible Matter”](#)  
 Phys.org, [“SIMP v WIMP: Novel thermal relic mechanism for dark matter creation in the early universe”](#)  
 Science Magazine News, [“Dark Matter: Out with the WIMPs, in with the SIMPs?”](#)

## Community

Journal Referee      *Physics Review Letters, Physics Review D, Journal of High Energy Physics*  
Organizer/Convener   *LHCP conference 2016, SRitp workshop 2017*

### List of Publications

- [1] Y. Hochberg *et al.*, “Detection of sub-MeV Dark Matter with Three-Dimensional Dirac Materials,” *Phys. Rev. D* **97**, no. 1, 015004 (2018) [arXiv:1708.08929 [hep-ph]].
- [2] M. Battaglieri *et al.*, “US Cosmic Visions: New Ideas in Dark Matter 2017: Community Report,” arXiv:1707.04591 [hep-ph].
- [3] S. M. Choi, Y. Hochberg, E. Kuflik, H. M. Lee, Y. Mambrini, H. Murayama and M. Pierre, “Vector SIMP dark matter,” *JHEP* **1710**, 162 (2017) [arXiv:1707.01434 [hep-ph]].
- [4] Y. Hochberg, E. Kuflik and H. Murayama, “Dark spectroscopy at lepton colliders,” *Phys. Rev. D* **97**, no. 5, 055030 (2018) [arXiv:1706.05008 [hep-ph]].
- [5] J. Alexander *et al.*, “Dark Sectors 2016 Workshop: Community Report,” arXiv:1608.08632 [hep-ph].
- [6] Y. Hochberg, T. Lin and K. M. Zurek, *Phys. Rev. D* **95**, no. 2, 023013 (2017) [arXiv:1608.01994 [hep-ph]].
- [7] Y. Hochberg, Y. Kahn, M. Lisanti, C. G. Tully and K. M. Zurek, *Phys. Lett. B* **772**, 239 (2017) [arXiv:1606.08849 [hep-ph]].
- [8] Y. Hochberg, T. Lin and K. M. Zurek, “Detecting Ultralight Bosonic Dark Matter via Absorption in Superconductors,” *Phys. Rev. D* **94**, no. 1, 015019 (2016) [arXiv:1604.06800 [hep-ph]].
- [9] Y. Hochberg, E. Kuflik and H. Murayama, “SIMP Spectroscopy,” *JHEP* **1605**, 090 (2016) [arXiv:1512.07917 [hep-ph]].
- [10] Y. Hochberg, M. Pyle, Y. Zhao and K. M. Zurek, “Detecting Superlight Dark Matter with Fermi-Degenerate Materials,” *JHEP* **1608**, 057 (2016) [arXiv:1512.04533 [hep-ph]].
- [11] Y. Hochberg, Y. Zhao and K. M. Zurek, “Superconducting Detectors for Superlight Dark Matter,” *Phys. Rev. Lett.* **116**, no. 1, 011301 (2016) [arXiv:1504.07237 [hep-ph]].
- [12] Y. Hochberg, E. Kuflik, H. Murayama, T. Volansky and J. G. Wacker, “Model for Thermal Relic Dark Matter of Strongly Interacting Massive Particles,” *Phys. Rev. Lett.* **115**, no. 2, 021301 (2015) [arXiv:1411.3727 [hep-ph]].
- [13] A. Falkowski, Y. Hochberg and J. T. Ruderman, “Displaced Vertices from X-ray Lines,” *JHEP* **1411**, 140 (2014) [arXiv:1409.2872 [hep-ph]].
- [14] Y. Hochberg, E. Kuflik, T. Volansky and J. G. Wacker, “Mechanism for Thermal Relic Dark Matter of Strongly Interacting Massive Particles,” *Phys. Rev. Lett.* **113**, 171301 (2014) [arXiv:1402.5143 [hep-ph]].

- [15] A. Dery, A. Efrati, G. Hiller, Y. Hochberg and Y. Nir, “Higgs couplings to fermions: 2HDM with MFV,” JHEP **1308**, 006 (2013) [arXiv:1304.6727 [hep-ph]].
- [16] A. Efrati, D. Grossman and Y. Hochberg, “A tale of two Higgs,” JHEP **1309**, 118 (2013) [arXiv:1302.7215 [hep-ph]].
- [17] A. Dery, A. Efrati, Y. Hochberg and Y. Nir, “What if  $\text{BR}(h \rightarrow \mu\mu)/\text{BR}(h \rightarrow \tau\tau)$  does not equal  $m_\mu^2/m_\tau^2$ ,” JHEP **1305**, 039 (2013) [arXiv:1302.3229 [hep-ph]].
- [18] I. Bediaga *et al.* [LHCb Collaboration], “Implications of LHCb measurements and future prospects,” Eur. Phys. Jour. C **73** (2013) 2373 [arXiv:1208.3355].
- [19] C. Delaunay, O. Gedalia, Y. Hochberg and Y. Soreq, “Predictions from Heavy New Physics Interpretation of the Top Forward-Backward Asymmetry,” JHEP **1212**, 053 (2012) [arXiv:1207.0740 [hep-ph]].
- [20] G. Hiller, Y. Hochberg and Y. Nir, “Supersymmetric  $\Delta A_{CP}$ ,” Phys. Rev. D **85**, 116008 (2012) [arXiv:1204.1046 [hep-ph]].
- [21] Y. Hochberg and Y. Nir, “Relating direct CP violation in D decays and the forward-backward asymmetry in  $t\bar{t}$  production,” Phys. Rev. Lett. **108**, 261601 (2012) [arXiv:1112.5268 [hep-ph]].
- [22] K. Blum, Y. Hochberg, Y. Nir, “Scalar-mediated  $t\bar{t}$  forward-backward asymmetry,” JHEP **1110**, 124 (2011). [arXiv:1107.4350 [hep-ph]].
- [23] C. Delaunay, O. Gedalia, Y. Hochberg, G. Perez, Y. Soreq, “Implications of the CDF  $t\bar{t}$  Forward-Backward Asymmetry for Hard Top Physics,” JHEP **1108**, 031 (2011). [arXiv:1103.2297 [hep-ph]].
- [24] K. Blum, C. Delaunay, O. Gedalia, Y. Hochberg, S. J. Lee, Y. Nir, G. Perez, Y. Soreq, “Implications of the CDF  $t\bar{t}$  Forward-Backward Asymmetry for Boosted Top Physics,” Phys. Lett. **B702**, 364-369 (2011). [arXiv:1102.3133 [hep-ph]].
- [25] K. Blum, Y. Hochberg and Y. Nir, “Implications of large dimuon CP asymmetry in  $B_{d,s}$  decays on minimal flavor violation with low  $\tan\beta$ ,” JHEP **1009**, 035 (2010) [arXiv:1007.1872 [hep-ph]].
- [26] G. Hiller, Y. Hochberg and Y. Nir, “Flavor in Supersymmetry: Anarchy versus Structure,” JHEP **1003**, 079 (2010) [arXiv:1001.1513 [hep-ph]].
- [27] O. Aharony, L. Berdichevsky, M. Berkooz, Y. Hochberg and D. Robles-Llana, “Inverted Sparticle Hierarchies from Natural Particle Hierarchies,” Phys. Rev. D **81**, 085006 (2010) [arXiv:1001.0637 [hep-ph]].
- [28] K. Blum, C. Delaunay and Y. Hochberg, “Vacuum (Meta)Stability Beyond the MSSM,” Phys. Rev. D **80**, 075004 (2009) [arXiv:0905.1701 [hep-ph]].
- [29] G. Hiller, Y. Hochberg and Y. Nir, “Flavor Changing Processes in Supersymmetric Models with Hybrid Gauge- and Gravity-Mediation,” JHEP **0903**, 115 (2009) [arXiv:0812.0511 [hep-ph]].
- [30] M. Berkooz and Y. Hochberg, “Splitting the Wino Multiplet by Higher-Dimensional Operators in Anomaly Mediation,” Phys. Rev. D **79**, 035008 (2009) [arXiv:0809.4832 [hep-ph]].