

Ely D. Kovetz

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PERSONAL DETAILS Citizenship: Israeli and American
Married +2

EMPLOYMENT *University of Texas at Austin*, Postdoctoral Fellow Oct. 2011 - Sep. 2014
Weinberg Theory Group, Department of Physics and Texas Cosmology Center

Johns Hopkins University, Postdoctoral Fellow Oct. 2014 - present
Department of Physics and Astronomy

EDUCATION *B.Sc. in Physics and Mathematics*, Tel-Aviv University (Magna Cum Laude) 2003 - 2006

Ph.D. in High-Energy Physics, Tel-Aviv University 2006 - 2011
Admitted to direct Ph.D. track in Mar. 2007 (with Summa Cum Laude M.Sc. course record).
Advisor: Prof. Nissan Itzhaki (awarded Jun. 2012)
Thesis: "Models of Inflation in String Theory and their Cosmological Signatures"

TEACHING *Teaching Assistant and Recitation Instructor*, Tel-Aviv University 2006 - 2011
Physics Lab I and II, 2006-2007
Mathematical Introduction for Physicists, 2007
Thermal Physics, 2009-2010
Introduction to Astrophysics, 2010
Analytical Mechanics, 2008-2011
Advanced Quantum Mechanics (Graduate course), 2008-2011

Teacher, Youth University Program (grades 9-10), Tel-Aviv University 2010 - 2011

EXPERIENCE *Team Leader*, Mathematical Research, Israeli Defense Force 2000 - 2003

Algorithm Developer, Applied Materials Inc., Rehovot, Israel 2004 - 2007
Received Mask Inspection Division Award for outstanding work.

AWARDS Amos de-Shalit Foundation Scholarship by The Weizmann Institute 2003

Abraham and Dvora Cohen Prize for Excellence in Teaching 2008

Getty Foundation Prize for Excellence in Teaching 2010

Yossef Dothan Prize for Excellence in Research 2010

PEER REVIEW

Astrophysics and High-Energy Physics Journals including: PRL, PRD, ApJ, MNRAS, JCAP, A&A
External Expert Reviewer for European Research Council (ERC)
Proposal Reviewer for National Science Foundation (NSF)
Panel Reviewer for NASA Astrophysics Theory Program (ATP)

OTHER ACTIVITIES

Organizer of HEP/Cosmology departmental seminar at Johns Hopkins University
Member of the CMB-S4 Collaboration
Member of the LISA Consortium
Member of the STARFIRE Collaboration
Member of the Australian SKA Pathfinder (ASKAP) Cosmology group
Member of the US Team of the CORE CMB Satellite proposal to ESA
Member of the Inflation Probe Mission Concept Study proposal to NASA
Lead organizer and Chair of the Scientific Organizing Committee:
“Second Annual Intensity Mapping Workshop (IM@Hopkins)”, JHU, Jun. 2017, Baltimore, MD
Member of the Scientific Organizing Committee:
“Cosmological Signals from Cosmic Dawn to the Present”, Feb. 2018, Aspen Center for Physics

MENTORING

Hiroya Nishikawa, Lingyuan Ji and Kaze Wong, current JHU graduate students
Courtney Schmitt, George Danforth and Chenxiao Zeng, former JHU undergraduates
Patrick C. Bryesse, former JHU graduate student (now postdoc at CITA)
Julian Muñoz, former JHU graduate student (now postdoc at Harvard)
Daniel Carney, former UT Austin graduate student (now postdoc at UBC)
Anindya Dey, former UT Austin graduate student (now postdoc at Rutgers)

SEMINAR TALKS

- High-Energy Physics seminar, Joint Israeli High-Energy Theory seminar, Newe Shalom, Israel 2008
- High-Energy Physics seminar, Tel-Aviv University, Israel 2008
- Astrophysics seminars at the Technion and Tel-Aviv University, Israel 2011
- Astrophysics seminar, Oxford University, Oxford, UK 2011
- Theory Group brown bag seminar, University of Texas at Austin, Austin 2011
- High-Energy Physics seminar, Texas A&M University, College Station, TX (invited talk) 2012
- Theory Group brown bag seminar, University of Texas at Austin, Austin, TX 2012

- Astrophysics seminars at Technion, Tel-Aviv University and Hebrew University, Israel 2012
- High-Energy Physics seminar, Texas A&M University, College Station, TX (invited talk) 2013
- Joint IAS/Princeton cosmology seminar, Princeton University, Princeton, NJ (invited talk) 2013
- Astrophysics (CAS) seminar, Johns Hopkins University, Baltimore, MD (invited talk) 2013
- Theory seminar, Case Western Reserve University, Cleveland, OH (invited talk) 2013
- Astrophysics talk, New York University, New York City, NY 2013
- Astrophysics seminar, Columbia University, New York City, NY 2013
- Astrophysics seminar, CITA, Toronto, Canada (invited talk) 2013
- INPA Journal Club, Lawrence Berkeley National Labs, Berkeley, CA 2013
- KIPAC Tea Talk, Stanford University, Stanford, CA 2013
- OBSCOS seminar, California Institute of Technology, Pasadena, CA (invited talk) 2013
- ITC seminar, Harvard University, Cambridge, MA (invited talk) 2013
- Astrophysics seminars at Technion, Tel-Aviv University and Hebrew University, Israel 2014
- Astrophysics Journal Club, Institut d'Astrophysique de Paris, Paris, France 2015
- Particle Physics and Astrophysics seminar, Weizmann Institute, Rehovot, Israel (invited talk) 2015
- Joint Astrophysics and High-Energy Physics seminar, Tel-Aviv University, Israel (invited talk) 2015
- Astrophysics seminar, Hebrew University of Jerusalem, Jerusalem, Israel (invited talk) 2015
- High-Energy Physics seminar, Harvard University, Cambridge, MA (invited talk) 2016
- Physics Colloquium, Washington University, St. Louis, MO (invited talk) 2016
- High-Energy Physics seminar, Ben-Gurion University, Beer Sheva, Israel (invited talk) 2016
- Astrophysics seminar, Tel-Aviv University, Tel-Aviv, Israel (invited talk) 2016
- Astrophysics seminar, Hebrew University of Jerusalem, Jerusalem, Israel (invited talk) 2016
- Astrophysics seminar, Ben-Gurion University, Beer Sheva, Israel (invited talk) 2016
- High-Energy Physics seminar, Tel-Aviv University, Tel-Aviv, Israel (invited talk) 2016
- Physics Colloquium, University of Washington, Seattle, WA (invited talk) 2017
- High-Energy Physics seminar, Syracuse University, Syracuse, NY (invited talk) 2017
- High-Energy Physics seminar, University of Minnesota, Minneapolis, MN (invited talk) 2017
- Astrophysics seminar, University of Pennsylvania, Philadelphia, PA (invited talk) 2017
- Physics Colloquium, University of Southern California, Los Angeles, CA (invited talk) 2018
- Astrophysics (CAS) seminar, Johns Hopkins University, Baltimore, MD (invited talk) 2018
- High-Energy Physics seminar, University of Maryland, College Park, MD (invited talk) 2018

CONFERENCES,
WORKSHOPS

- Conference, COSMO 2009, CERN, Geneva, Switzerland Sep. 2009
Poster: “Cosmological imprints of pre-inflationary particles”
- Conference, PASCOS 2011, DAMTP, Cambridge, UK Jul. 2011
Talk: “Pre-inflationary relics and large scale anomalies”
- Conference, “Inflationary Theory and Confrontation with Planck”, Aspen, CO Jan. 2012
Invited talk: “Pre-inflationary relics and CMB anomalies”
- University of Cambridge/Texas A&M Workshop on Inflation, Cook’s Branch, TX Mar. 2012
Invited talk: “Probes of pre-inflationary relics: from theory to data analysis”
- Workshop at University of Kyoto, Kyoto, Japan; “Gravitation and Cosmology” Dec. 2012
Talk: “Probing structures using 21st-century measurements of 21-cm lensing”
- Workshop, APC, Paris, France; “Big Bang, Big Data, Big Computers” Sep. 2012
- Workshop “Cosmology Beyond the Power Spectrum”, BCCP, Berkeley, CA Apr. 2013
Invited talk: “Probing structures using measurements of 21-cm lensing”
- Conference, UC Davis, Davis, CA May 2013
“Mining the Cosmic Frontier in the Planck Era”
- Conferences, UC Davis, Davis, CA May 2013
“Fundamental Questions in Cosmology”
- Workshop, Princeton Center for Theoretical Science, Princeton, NJ Jun. 2013
“Cosmology in the Planck era” (invited participant)
- Workshop, Aspen Center for Physics, Aspen, CO Jul. 2014
“Combining Probes in Cosmological Surveys” (invited participant)
- Workshop, Penn State University, State College, PA Mar. 2015
“3rd Neighborhood workshop on Astrophysics and Cosmology”
- Workshop, University of Michigan, Ann Arbor, MI Sep. 2015
“Cosmology with CMB-S4”
- Workshop, LBNL, Berkeley, CA Mar. 2016
“Cosmology with CMB-S4”
- Workshop, KIPAC, Stanford University, Menlo Park, CA Mar. 2016
“Opportunities and Challenges in Intensity Mapping” (invited participant)
- Workshop, Penn State University, State College, PA Mar. 2016
“4th Neighborhood workshop on Astrophysics and Cosmology”
Talk: “Flaring Tidally Compressed Dark Matter Clumps”

- Workshop, NRAO and Kavli Foundation, Baltimore, MD Aug. 2016
 “U.S. Radio/Millimeter/Submillimeter Science Futures II”
- Workshop, Fermilab, Batavia, IL Sep. 2016
 “Simplicity II Theory Workshop”
 Invited Talk: “The LIGO Discovery and Massive Compact Dark Matter”
- Workshop, University of Chicago, Chicago, IL Sep. 2016
 “Cosmology with CMB-S4”
- Workshop, University of Chicago, Chicago, IL Sep. 2016
 ”Future Cosmic Surveys”
- Workshop, Brookhaven National Laboratory, Upton, NY Oct. 2016
 “Dark Interactions: Perspectives from Theory and Experiment”
 Invited Plenary Talk: “The Status of Primordial Black Holes as Dark Matter”
- Workshop, NASA Goddard Space Flight Center, Goddard, MD Oct. 2016
 “Joint JHU/Goddard Annual Interaction Workshop”
 Invited Talk: “The LIGO Discovery and Primordial Black Holes as Dark Matter”
- Workshop, Technion, Haifa, Israel Nov. 2016
 “Gravitational Waves and Compact Objects”
 Invited Talk: “The LIGO Discovery and Massive Compact Dark Matter”
- April Meeting, American Physical Society, Washington DC Jan. 2017
 “Focus Session: Gravitational Wave Observations and Dark Matter”
 Invited Talk: “The LIGO Discovery and Massive Compact Dark Matter”
- Workshop, Johns Hopkins University, Baltimore, MD Jul. 2017
 “Second Annual Line-Intensity Mapping Workshop (IM@Hopkins)”
 Lead organizer; chair of SOC; presented opening and closing remarks;
 First author of “LIM 2017 Status Report”, an overview of the field following two LIM workshops.
- Conference, “Cosmological Signals from Cosmic Dawn to the Present”, Aspen, CO Feb. 2018
 Invited overview talk: “Line-Intensity Mapping: (Bird’s-Eye) Theory Review”
 Member of the Scientific Organizing Committee.
- Workshop, “Structure formation beyond WIMPs”, Technion, Haifa, Israel May. 2018
 Invited Talk: “The Dark Matter Interpretation of the Anomalous EDGES 21cm Absorption Signal”
- Conference, PASCOS 2018, CWRU, Cleveland, US Jun. 2018
 Invited Talk: “The Primordial-Black-Hole Dark Matter Scenario”
- Workshop, Princeton University, Princeton, NJ Sep. 2018
 “Princeton CMB-S4 Collaboration Workshop”
 FireSlide: “Tightly Coupled Dark Matter: Killing Two Birds with One Stone”
- Conference, “Beyond Standard Model: Where do we go from here?”, GGI Florence, Italy Oct. 2018
 Invited Talk: “New cosmological probes of the lightest and heaviest dark matter”

List of Publications

1. N. Itzhaki and **E. D. Kovetz** 2007
“Inflection Point Inflation and Time Dependent Potentials in String Theory”
JHEP **0710**, 054 (2007) [arXiv:0708.2798 [hep-th]].
2. N. Itzhaki and **E. D. Kovetz** 2009
“A Phase Transition between Small and Large Field Models of Inflation”
Class. Quant. Grav. **26**, 135007 (2009) [arXiv:0810.4299 [hep-th]].
3. A. Fialkov, N. Itzhaki and **E. D. Kovetz** 2010
“Cosmological Imprints of Pre-Inflationary Particles”
JCAP **1002**, 004 (2010) [arXiv:0911.2100 [astro-ph.CO]].
4. **E. D. Kovetz**, A. Ben-David and N. Itzhaki 2010
“Giant Rings in the CMB”
Astrophys. J. **724**, 374, (2010) [arXiv:1005.3923 [astro-ph.CO]].
5. A. Ben-David, **E. D. Kovetz** and N. Itzhaki 2012
“Parity in the CMB: Space Oddity”
Astrophys. J. **748**, 39 (2012) [arXiv:1108.1702 [astro-ph.CO]].
6. A. Dey, **E. D. Kovetz** and S. Paban 2012
“Non-Gaussianity in the Cosmological Perturbation Spectrum due to Primordial Anisotropy II”
JCAP **1210**, 055 (2012) [arXiv:1205.2758 [hep-th]].
7. D. Carney, W. Fischler, **E. D. Kovetz**, D. Lorshbough and S. Paban 2012
“Rapid Field Excursions and the Inflationary Tensor Spectrum”
JHEP **1211**, 042 (2012) [arXiv:1209.3848 [hep-th]].
8. **E. D. Kovetz** and M. Kamionkowski 2013
“Galaxy-Cluster Masses via 21st-Century Measurements of Lensing of 21-cm Fluctuations”
Phys. Rev. D **87**, 063516 (2013) [arXiv:1210.3041 [astro-ph.CO]].
9. **E. D. Kovetz** and M. Kamionkowski 2013
“21-cm Lensing and the Cold Spot in the Cosmic Microwave Background”
Phys. Rev. Lett. **110**, 171301 (2013) [arXiv:1211.4610 [astro-ph.CO]].

10. B. Rathaus, **E. D. Kovetz** and N. Itzhaki 2013
“Studying the Peculiar Velocity Bulk Flow in a Sparse Survey of Type-Ia SNe”
Mon. Not. Roy. Astron. Soc. **431**, 3678 (2013) [arXiv:1301.7710 [astro-ph.CO]].
11. A. Dey, **E. D. Kovetz** and S. Paban 2014
“Power Spectrum and Non-Gaussianities in Anisotropic Inflation”
JCAP **1406**, 025 (2014) [arXiv:1311.5606 [hep-th]].
12. A. Ben-David and **E. D. Kovetz** 2014
“A Close Examination of CMB Mirror-Parity after Planck”
Mon. Not. Roy. Astron. Soc. **445**, 2116 (2014) [arXiv:1403.2104 [astro-ph.CO]].
13. P. C. Breysse, **E. D. Kovetz** and M. Kamionkowski 2014
“Carbon Monoxide Intensity Mapping at Moderate Redshifts”
Mon. Not. Roy. Astron. Soc. **443**, 3506 (2014) [arXiv:1405.0489 [astro-ph.CO]].
14. B. Rathaus and **E. D. Kovetz** 2014
“The CMB Derivatives of Planck’s Beam Asymmetry”
Mon. Not. Roy. Astron. Soc. **443**, 750 (2014) [arXiv:1405.1609 [astro-ph.CO]].
15. M. Kamionkowski and **E. D. Kovetz** 2014
“Statistical Diagnostics to Identify Galactic Foregrounds in B-mode Maps”
Phys. Rev. Lett. **113**, 191303 (2014) [arXiv:1408.4125 [astro-ph.CO]].
(featured as a Physics Synopsis and a PRL Editors’ Suggestion).
16. **E. D. Kovetz** and M. Kamionkowski 2015
“Cosmic Bandits: Exploration versus Exploitation in CMB B-Mode Experiments”
New Astron. **43** 26 (2015) [arXiv:1308.1404 [astro-ph.IM]].
17. **E. D. Kovetz** and M. Kamionkowski 2015
“Strategy to Minimize Dust Foregrounds in *B*-mode Searches”
Phys. Rev. D **91**, 081303 (2015) [arXiv:1502.00625 [astro-ph.CO]].
18. P. C. Breysse, **E. D. Kovetz** and M. Kamionkowski 2015
“Masking Line Foregrounds in Intensity Mapping Surveys”
Mon. Not. Roy. Astron. Soc. **452**, 3408 (2015) [arXiv:1503.05202 [astro-ph.CO]].

19. J. Muñoz, **E. D. Kovetz** and Yacine Ali-Haïmoud 2015
“Heating of Baryons due to Scattering with Dark Matter During the Dark Ages”
Phys. Rev. D. **92**, 083528 (2015) [arXiv:1509.00029 [astro-ph.CO]].
20. A. Raccanelli, **E. D. Kovetz**, L. Dai and M. Kamionkowski 2016
“Detecting the Integrated Sachs-Wolfe Effect with High-Redshift 21-cm Surveys”
Phys. Rev. D **93**, 083512 (2016) [arXiv:1502.03107 [astro-ph.CO]].
21. M. Kamionkowski and **E. D. Kovetz** 2016
“The Quest for B Modes from Inflationary Gravitational Waves”
Ann. Rev. Astron. Astrophys. **54**, 227-269 (2016) [arXiv:1510.06042 [astro-ph.CO]].
22. P. C. Breysse, **E. D. Kovetz** and M. Kamionkowski 2016
“The High Redshift Star-Formation History from Carbon-Monoxide Intensity Maps”
Mon. Not. Roy. Astron. Soc. **457**, L127 (2016) [arXiv:1507.06304 [astro-ph.CO]].
23. L. Dai, M. Kamionkowski, **E. D. Kovetz**, A. Raccanelli and M. Shiraishi 2016
“Antisymmetric Galaxy Cross-Correlations as a Cosmological Probe”
Phys. Rev. D. **93**, 023507 (2016) [arXiv:1507.05618 [astro-ph.CO]].
24. Y. Ali-Haïmoud, **E. D. Kovetz** and J. Silk 2016
“Flaring of tidally compressed dark-matter clumps”
Phys. Rev. D. **93**, 043508 (2016) [arXiv:1511.02232 [astro-ph.HE]].
25. J. B. Muñoz, D. Grin, L. Dai, M. Kamionkowski, and **E. D. Kovetz** 2016
“Search for Compensated Isocurvature Perturbations with Planck Power Spectra”
Phys. Rev. D. **93**, 043008 (2016) [arXiv:1511.04441 [astro-ph.CO]].
26. S. Bird, I. Cholis, J. B. Muñoz, Y. Ali-Haïmoud, M. Kamionkowski, **E. D. Kovetz**, A. Raccanelli and A. G. Riess 2016
“Did LIGO Detect Dark Matter?”
Phys. Rev. Lett. **116**, 201301 (2016) [arXiv:1603.00464 [astro-ph.CO]].
(featured as a Physics Synopsis).
27. A. Raccanelli, **E. D. Kovetz**, S. Bird, I. Cholis and J. B. Muñoz 2016
“Determining the Progenitors of Merging Black Hole Binaries”
Phys. Rev. D. **94**, 023516 (2016) [arXiv:1605.01405 [astro-ph.CO]].

28. J. B. Muñoz, **E. D. Kovetz**, L. Dai and M. Kamionkowski 2016
“Lensing of Fast Radio Bursts as a Probe of Compact Dark Matter”
Phys. Rev. Lett. **117**, 091301 (2016) [arXiv:1605.00008 [astro-ph.CO]]
(PRL Editors’ Suggestion).
29. I. Cholis, **E. D. Kovetz**, Y. Ali-Haïmoud, S. Bird, J. B. Muñoz,
M. Kamionkowski, A. Raccanelli 2016
“Orbital Eccentricities in Primordial Black Hole Binaries”
Phys. Rev. D. **94**, 084013 (2016) [arXiv:1606.07437 [astro-ph.HE]].
30. D. N. Pfeffer, **E. D. Kovetz** and M. Kamionkowski 2017
“Ultra-High-Energy-Cosmic-Ray Hot Spots from Tidal Disruption Events”
Mon. Not. Roy. Astron. Soc. **466**, 2922 (2017) [arXiv:1512.04959 [astro-ph.HE]].
31. **E. D. Kovetz**, A. Raccanelli and M. Rahman 2017
“Cosmological Constraints with Clustering-Based Redshifts”
Mon. Not. Roy. Astron. Soc. **468**, 3650 (2017) [arXiv:1606.07434 [astro-ph.CO]].
32. P. C. Breysse, **E. D. Kovetz**, P. S. Behroozi, L. Dai and M. Kamionkowski 2017
“Insights from Probability Distribution Functions of Intensity Maps”
Mon. Not. Roy. Astron. Soc. **467**, 2996 (2017) [arXiv:1609.01728 [astro-ph.GA]].
33. **E. D. Kovetz**, I. Cholis, P. C. Breysse and M. Kamionkowski 2017
“The Black Hole Mass Function from Gravitational Wave Measurements”
Phys. Rev. D. **95**, 103010 (2017) [arXiv:1611.01157 [astro-ph.CO]].
34. J. B. Muñoz, **E. D. Kovetz**, A. Raccanelli, M. Kamionkowski and J. Silk 2017
“Towards a measurement of the spectral runnings”
JCAP **1705**, 032 (2017) [arXiv:1611.05883 [astro-ph.CO]].
35. **E. D. Kovetz** 2017
“Probing Primordial-Black-Hole Dark Matter with Gravitational Waves”
Phys. Rev. Lett. **119**, 131301 (2017) [arXiv:1705.09182 [astro-ph.CO]].
36. Y. Ali-Haïmoud, **E. D. Kovetz** and M. Kamionkowski 2017
“The merger rate of primordial-black-hole binaries”
Phys. Rev. D. **96**, 123523 (2017) [arXiv:1709.06576 [astro-ph.CO]].
37. F. Finelli et al. (total of 95 contributing authors, including **E. D. Kovetz**) 2018
“Exploring Cosmic Origins with CORE: Inflation”
JCAP **1804**, 016 (2018) [arXiv:1612.08270 [astro-ph.CO]].

38. **E. D. Kovetz**, I. Cholis, M. Kamionkowski and J. Silk 2018
 “Limits on Runaway Growth of Intermediate Mass Black Holes from Advanced LIGO”
 Phys. Rev. D. **97**, 123003 (2018), [arXiv:1803.00568 [astro-ph.HE]].
39. **E. D. Kovetz**, V. Poulin, V. Gluscevic, K. K. Boddy, R. Barkana and M. Kamionkowski 2018
 “Tighter Limits on Dark Matter Explanations of the Anomalous EDGES 21cm Signal”
 Phys. Rev. D. **98**, 103529 (2018), [arXiv:1807.11482 [astro-ph.CO]].
40. K. K. Boddy, V. Gluscevic, V. Poulin, **E. D. Kovetz**, M. Kamionkowski and R. Barkana 2018
 “A Critical Assessment of CMB Limits on Dark Matter-Baryon Scattering:
 New Treatment of the Relative Bulk Velocity”
 Accepted for publication in PRD (2018), arXiv:1808.00001 [astro-ph.CO].
41. K. W. K. Wong, **E. D. Kovetz**, C. Cutler and E. Berti 2018
 “Expanding the LISA Horizon from the Ground”
 Accepted for publication in PRL (2018), arXiv:1808.08247 [astro-ph.CO].
42. L. Ji, **E. D. Kovetz** and Marc Kamionkowski 2018
 “Strong Lensing of Gamma Ray Bursts as a Probe of Compact Dark Matter”
 Accepted for publication in PRD (2018), arXiv:1809.09627 [astro-ph.CO].
43. J. L. Bernal, A. Raccanelli, **E. D. Kovetz**, D. Parkinson, R. P. Norris,
 G. Danforth and C. Schmitt 2018
 “Probing Λ CDM cosmology with the Evolutionary Map of the Universe survey”
 Accepted for publication in JCAP (2018), arXiv:1810.06672 [astro-ph.CO].

PREPRINTS

44. N. Abazajian et al. (total of 86 contributing authors, including **E. D. Kovetz**)
 “CMB-S4 Science Book, First Edition” [arXiv:1610.02743 [astro-ph.CO]].
45. H. Nishikawa, **E. D. Kovetz**, M. Kamionkowski and J. Silk
 “Primordial-black-hole mergers in dark-matter spikes”
 Submitted to PRD (2017), arXiv:1708.08449 [astro-ph.CO].
46. **E. D. Kovetz**, M. Viero, A. Lidz, L. Newburgh, M. Rahman,
 E. Switzer et al. (total of 48 contributing authors)
 “Line Intensity Mapping: 2017 Status Report”
 Submitted to Physics Reports (2017), arXiv:1709.09066 [astro-ph.CO].
47. **E. D. Kovetz**, I Cholis and D. E. Kaplan
 “Bounds on Ultra-Light Hidden-Photon Dark Matter from 21cm at Cosmic Dawn”
 Submitted to PRL (2018), arXiv:1809.01139 [astro-ph.CO].
48. C. Zeng, **E. D. Kovetz**, X. Chen, J. B. Muñoz and Marc Kamionkowski
 “Searching for Oscillations in the Primordial Power Spectrum with CMB and LSS Data”
 Submitted to PRD (2018), arXiv:1812.05105 [astro-ph.CO].