

Curriculum Vitae - Shimon Kolkowitz

Department of Physics,
University of Wisconsin,
1150 University Avenue,
Madison, Wisconsin, 53706

Phone: (303) 492-4058
Email: kolkowitz@wisc.edu

Research Appointments

University of Wisconsin - Madison

Assistant Professor, 2017 - Present.

JILA, NIST, and University of Colorado, Boulder

National Research Council (NRC) postdoctoral research associate in the group of Professor Jun Ye, 2015 - 2017.

Harvard University, Department of Physics

Graduate student in the group of Professor Mikhail D. Lukin, 2008 - 2015.

Teaching

Harvard University, Department of Physics

Teaching fellow for Physics 285B: Modern Atomic and Optical Physics II, 2013.

Stanford University, Department of Economics

Teaching assistant for Economics 50: Economic Analysis I, 2007.

Education

Ph.D. Physics, Harvard University, 2015.

A.M. Physics, Harvard University, 2011.

B.S. Physics, *with distinction*, Stanford University, 2008.

Minors: Economics.

Honors and Awards

National Defense Science and Engineering Graduate Fellowship, 2010 - 2013.

National Science Foundation Graduate Research Fellowship, 2013 - 2015.

National Research Council (NRC) Postdoctoral Fellowship, 2015 - 2017.

Outstanding Presentation Award, NIST Boulder Laboratories Postdoctoral Poster Symposium, 2016.

Refereed Publications

S. Kolkowitz, S.L. Bromley, T. Bothwell, M.L. Wall, G.E. Marti, A.P. Koller, X. Zhang, A.M. Rey, and J. Ye, “Spin-orbit coupled fermions in an optical lattice clock,” *Nature* **542**, 66-70 (2017).

S. Kolkowitz, I. Pikovski, N. Langellier, M.D. Lukin, R.L. Walsworth, and J. Ye, “Gravitational wave detection with optical lattice atomic clocks,” *Physical Review D* **94**, 124043 (2016).

S. Kolkowitz, A. Safira, A.A. High, R.C. Devlin, S. Choi, Q.P. Unterreithmeier, D. Patterson, A.S. Zibrov, V.E. Manucharyan, H. Park, and M.D. Lukin, “Probing Johnson noise and ballistic transport in normal metals with a single spin qubit,” *Science* **347**, no. 6226 (2015).

This work was highlighted in: L.P. McGuinness and F. Jelezko, “Look but don’t touch the metals,” *Science* **347**, no. 6226 (2015). Perspectives section.

S. Kolkowitz, Q.P. Unterreithmeier, S.D. Bennett, and M.D. Lukin, “Sensing distant nuclear spins with a single electron spin,” *Physical Review Letters* **109**, 137601 (2012).

This work was highlighted in: “Exercising spin control,” *Science* **338**, Editors’ Choice section (2012).

S. Kolkowitz, A.C.B. Jayich, Q.P. Unterreithmeier, S.D. Bennett, P. Rabl, J.G.E. Harris, and M.D. Lukin, “Coherent sensing of a mechanical resonator with a single-spin qubit,” *Science* **335**, no. 6076 (2012).

This work was highlighted in: P.A. Treutlein, “Single spin feels the vibrations,” *Science* **335**, no. 6076 (2012). Perspectives section.

S.D. Bennett, S. Kolkowitz, Q.P. Unterreithmeier, P. Rabl, A.C.B. Jayich, J.G.E. Harris, and M.D. Lukin, “Measuring mechanical motion with a single spin,” *New Journal of Physics* **14**, 125004 (2012).

P. Rabl, S. Kolkowitz, F.H.L. Koppens, J.G.E. Harris, P. Zoller, and M.D. Lukin, “A quantum spin transducer based on nanoelectromechanical resonator arrays,” *Nature Physics* **6**, 602-608 (2010).

P. Fierlinger, R. DeVoe, B. Flatt, G. Gratta, M. Green, S. Kolkowitz, F. Leport, M. Montero Diez, R. Neilson, K. O’Sullivan, A. Pocar, and J. Wodin, “A microfabricated sensor for thin dielectric layers,” *Review of Scientific Instruments* **79**, 045101 (2008).

D.S. Leonard, *et al.* (EXO Collab.), “Systematic study of trace radioactive impurities in candidate construction materials for EXO-200,” *Nuclear Instruments and Methods in Physics Research Sect. A* **591**, 490 (2008).

R. Abramitzky, L. Einav, S. Kolkowitz, and R. Mill, “On the optimality of line call challenges in professional tennis,” *International Economic Review* **53**, 939-964 (2012).

Patents

S. Kolkowitz, A. Safira, A.A. High, R.C. Devlin, S. Choi, Q.P. Unterreithmeier, D. Patterson, A.S. Zibrov, V.E. Manucharyan, H. Park, and M.D. Lukin, “A sensor for measurements using Johnson noise in materials.” Patent pending, application number PCT/US16/15710. Filed January 29th, 2015.

Professional Activities

Referee for the journals *New Journal of Physics*, *Journal of Optics*, *Journal of the Optical Society of America B*, *Nature Communications*, *Physical Review Applied*, *Physical Review B*, *Review of Scientific Instruments*, and *Nano Letters*.

Invited talks

College of Optical Sciences Colloquium, University of Arizona, AZ - Feb. 2nd, 2017

Atomic Physics Seminar, University of Wisconsin-Madison, WI - Jan. 24th, 2017

Special Physics Colloquium, UC Santa Barbara, CA - Jan. 5th, 2017

CNAM colloquium, University of Maryland, MD - Oct. 6th, 2016

ITAMP workshop: "Laboratory Cosmology: AMO Physics Techniques and Applications for Cosmological Phenomena," Harvard, MA - Sep. 12th, 2016

NASA Fundamental Physics workshop, Dana Point, CA - Apr. 11th, 2016

ITAMP weekly seminar, Harvard, MA - Mar. 31st, 2016

Winter school workshop: "Advanced atomic sources and extreme cooling of atoms and molecules: techniques and applications," Les Houches, France - Jan. 27th, 2016

Condensed Matter and Biophysics seminar, Washington University in St. Louis, MO - Dec. 1st, 2014

Boston Area Carbon Nanoscience seminar, MIT, MA - Oct. 24th, 2014

Atomic, Bio, and Condensed Matter seminar, University of Washington, WA - Oct. 16th, 2014

Center for Ultracold Atoms triple feature seminar, Harvard-MIT, MA - Sep. 30th, 2014

California NanoSystems Institute seminar, UC Santa Barbara, CA - June 1st, 2012

ITAMP workshop: "Optomechanics and Macroscopic Cooling," Harvard, MA - Feb. 7th, 2011

Condensed Matter special seminar, Weizmann Institute, Israel - Jan. 31st, 2011