

**ALICIA J KOLLÁR**  
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## EDUCATION

University of Maryland, Assistant Professor	2019-Present
Princeton University, Postdoctoral Scholar	2017-2019
Stanford University, Postdoctoral Scholar	2016-2017
Stanford University, Ph.D., Applied Physics.	2010-2016
Princeton University, B.A. Physics	2006-2010

## RESEARCH INTERESTS

Quantum Simulation  
Superconducting Circuits  
Circuit and Cavity QED  
Many-Body Physics with Photons  
Open and Driven-Dissipative Systems

## ADVISORS

Andrew Houck (Postdoc)  
Benjamin Lev (Ph.D.)

## COLLABORATORS

Alexey Gorshkov (JQI, NIST Gaithersberg)  
Peter Sarnak (Princeton University, Mathematics)  
Rivka Bekenstein (Harvard University, ITAMP)  
Jonathan Keeling (University of Saint Andrews, Physics and Astronomy)

## PUBLICATIONS

- 7) A. J. Kollár, M. Fitzpatrick, P. Sarnak, A.A. Houck, *Line-Graph Lattices: Euclidean and Non-Euclidean Flat Bands and Implementations in Circuit QED*, (in preparation).
- 6) A. J. Kollár, M. Fitzpatrick, A. A. Houck, *Hyperbolic Lattices in Circuit Quantum Electrodynamics*, arXiv:1802.09549.
- 5) V. D. Vaidya, Y. Guo, R. M. Kroeze, K. E. Ballantine, A. J. Kollár, J. Keeling, B. L. Lev, *Tunable-range, photon-mediated atomic interactions in multimode cavity QED*, *Physical Review X*, **8**, 011002 (2018), arXiv:1708.08933.

- 4) F. Yang, A. J. Kollár, S. F. Taylor, R. W. Turner, B. L. Lev, *A Scanning Quantum Cryogenic Atom Microscope*, *Physical Review Applied*, **7**, 034026 (2017), arXiv:1608.06922.
- 3) A. J. Kollár, A. T. Papageorge, K. Baumann, V. D. Vaidya, Y. Guo, J. Keeling, B. L. Lev, *Supermode-Density-Wave-Polariton Condensation*, *Nature Communications*, **8**, 14386 (2017), arXiv:1606.04127.
- 2) A. T. Papageorge, A. J. Kollár, B. L. Lev, *Coupling to Modes of a Near-Confocal Optical Resonator using a Digital Light Modulator*, *Optics Express*, **24**, 11447 (2016), arXiv:1603.06900.
- 1) A. J. Kollár, A. T. Papageorge, K. Baumann, M. A. Armen, B. L. Lev, *An adjustable-length cavity and Bose-Einstein condensate apparatus for multimode cavity QED*, *New Journal of Physics*, **17**, 043012 (2015), arXiv:1407.3842.

### INVITED TALKS

- 11) *Band Engineering for Quantum Simulation in Circuit QED*  
DAMOP, Milwaukee, May 2019
  - 10) *Hyperbolic and Flat-Band Lattices in Circuit QED*  
The Dynamics of Quantum Information KITP, September 2018
  - 9) *Hyperbolic and Flat-Band Lattices in Circuit QED*  
Gordon Research Conference on Quantum Science, Stonehill College, July 2018
  - 8) *Hyperbolic and Flat-Band Lattices in Circuit QED*  
Dynamics and Dissipation in Quantum Simulation Workshop, Stanford University, July 2018
  - 7) *Quantum Simulation and Lattices in Circuit QED*  
Workshop on 2D Quantum Metamaterials, NIST, Gaithersberg, April 2018
  - 6) *Self-organization in multimode cavity QED and magnetometry with 1D Bose-Einstein condensates*  
Quantum Innovators, Waterloo Canada, October 2016
  - 5) *Supermode-density-wave-polariton condensation in a multimode cavity QED-BEC system*  
Stanford Photonics Research Center Symposium, Stanford, September 2016
  - 4) *Supermode-polariton condensation in a multimode cavity QED-BEC system*  
International Conference on Quantum Optics, Obergurgl Austria, February 2016
  - 3) *Beyond mean-field physics in multimode cavity QED*  
POLATOM, Bad Honnef Germany, June, 2015
  - 2) *Exploring strongly correlated matter with multimode cavity QED*  
Workshop on the Physics of Quantum Electronics, Snowbird Utah, January 2012
  - 1) *Exploring strongly correlated matter with multimode cavity QED*
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Stanford Photonics Research Center Symposium, Stanford, September 2011

**SEMINARS**

- 5) *Hyperbolic and Flat-Band Lattices in Circuit QED*  
Condensed Matter Seminar, City University of New York, December 2018
  - 4) *Hyperbolic and Flat-Band Lattices in Circuit QED*  
AMO/QI Seminar, University of California Berkeley, October 2018
  - 3) *Hyperbolic and Flat-Band Lattices in Circuit QED*  
Seminar, University of Massachusetts, Amherst, March 2018
  - 2) *Hyperbolic and Flat-Band Lattices in Circuit QED*  
JQI Seminar, University of Maryland, February 2018
  - 1) *Supermode-polariton condensation in a multimode cavity QED-BEC system*  
Applied Physics Optics and Electronics Seminar, Stanford, January 2016
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