Prof. James K. Thompson
Curriculum Vitae

JILA& Dept. of Physics
440 UCB, JILA X429
Boulder, Colorado 80309-0440

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Present Position
JILA/NIST & Dept. of Physics, University of Colorado at Boulder
JILA Fellow and Professor, Adjoint (2019-present)
JILA Fellow and Associate Professor, Adjoint (2013-present)
Associate Fellow and Assistant Professor, Adjoint (Sept. 2006 to June 2013)

Postdoctoral Position
Massachusetts Institute of Technology Cambridge, MA
MIT-Harvard Center for Ultracold Atoms with Vladan Vuletić (2003-2006)

Education
Massachusetts Institute of Technology, Ph.D. Cambridge, MA
Ph.D. Physics, advisor David E. Pritchard, "Two-Ion Control and Polarizations Forces for Precise Mass Comparisons" (1997 - 2003)

Florida State University, B.A., M.S. Tallahassee, FL
M.S. Physics, 1997, Laser spectroscopy of helium-like ions
B.A. Physics, 1995, *Sum. Cum Laude*, Honors in Liberal Studies and in Major

Awards
2018 Fellow of the American Physical Society
2013 Department of Commerce Bronze Medal
2004 DAMOP Doctoral Thesis Prize
Barry M. Goldwater Scholar in Mathematics, Science and Engineering
Phi Beta Kappa Marion Jewell Hay Award for Academic Excellence
Florida State University Sr., Jr. and Soph. of the Year Academic Awards
National Merit Scholar

Selected Publications

"Momentum-Exchange Interactions in a Bragg Atom Interferometer Suppress Doppler Dephasing,"
Luo et al, *Science* **384**, no. 6695, 551–56 (May 2024)

"Observing Dynamical Phases of a Bardeen-Cooper-Schrieffer Superconductor in a Cavity QED Simulator,"
Young et al, *Nature* **625** 679-684 (Jan 2024)

"Direct comparison of two spin squeezed optical clocks below the quantum projection noise limit,"
Robinson et al, *Nature Physics* 1-6 (Jan 2024)

"Exploring dynamical phase transitions with cold atoms in an optical cavity,"
Muniz *et al, Nature* **580** 602-607 (April 2020)

"Cavity mediated collective spin exchange interactions in a Sr superradiant laser," Norcia *et al, Science* 361, 259-262 (2018)

"Frequency measurements of superradiance from the strontium clock transition,"
Norcia *et al*, accepted to *Phys. Rev. X* 8, 021036 (2018)

"Narrow-line laser cooling by adiabatic transfer,"
Norcia *et al, New J. Phys.* **20** 023021 (2018)
"Role of atoms in atomic gravitational-wave detectors,"
Norcia *et al, Phys. Rev. A* **96**, 042118 (2017)
"Superradiance on the millihertz linewidth strontium clock transition,"
Norcia *et al, Science Advances* 2016;2:e1601231 (2016)
"A cold-strontium laser in the superradiant crossover regime,"
Norcia *et al, Phys. Rev. X* **6**, 011025 (2016)
"Deterministic squeezed states with collective measurements and feedback,"
Cox *et al, Phys. Rev. Lett*. **116**, 093602 (2016)
"Reduced spin measurement back-action for a phase sensitivity 10 x beyond the SQL,"
Bohnet *et al*, *Nature Photonics* **8**, 731-736 (2014)
"A steady state superradiant laser with <1 intracavity photon,"
Bohnet *et al, Nature* **484** 78-81 (2012)

Service

JILA Faculty Hiring Search, Committee Chair Fall 2023 to Spring 2024
CU Physics Graduate Comprehensive Examination Committee Fall 2017-Spring 2023
JILA Electronics Shop Fellow Supervisor 2019-present
JILA Building Committee 2015 - present
JILA Beautification Committee 2008 to present
JILA Visiting Fellow Secretary 2014 - present
CUBit Advisory Board 2019- present
JILA Vision Committee 2021 – 2022
QLCI Quantum Forge Fall 2021 – Spring 2022
QLCI Quantum Leap Challenge Institute Executive Committee 2020- present
International Conference on Laser Spectroscopy, co-Chair June 2021. 2019- 2023
Aspen Winter Conference on "Many-Body Cavity QED", December 2021, organizing committee
JILA Visiting Fellow committee 2012 to 2014
JILA/Physics Faculty Search Committee 2018/2019 (Quantum Information Science)
Aspen Winter Conference on Cavity QED Quantum Many Body Physics Co-organizer (Dec 2021)
ICOLS 2021 Celebration (Virtual), Co-organizer (June 2021)
US/Japan Seminar on Atomic Physics Co-organizer 2018
APS Topical Group on Precision Measurement & Fundamental Constants
Executive Committee Member at Large 6/2016- 3/2019
CU Physics R3 Committee Representation, Retention, Recruitment Fall 2017-Spring 2018
JILA Faculty Hiring Committee 2016/2017
JILA Academic Review and Planning Advisory Committee ARPAC 2016/17
CU Honors Council 2013-2015
CU Physics Honors Committee 2013-2015
CU Physics Graduate Committee 2006-2013, 2015-2019
Visiting Graduate Student AMO/CM/Bio/PER Overview Talks 2012-2018
Graduate Research Opportunities AMO for incoming students 2016, 2017

Coordinated Selection of Katharine Burr Blodgett Fellowship Recipients for Minorities 2013
Review Panel ESF's EuroQUASAR, NSF Physics at the Information Frontier
NSF, NSSEFF Fellows program reviewer
Reviewer for *Science, Nature, Nature Photonics, Physical Review Letters, Physical Review X, Optics Letters, Optics Express, Applied Physics Letters, J. of Optical Society B, New J. Physics,* etc.

Teaching & Education

PHYS2170 Intro. to Modern Physics, Spring 2024
PHYS7560 Graduate Quantum Optics Spring 2023
PHYS3330 Junior Electronics Spring 2022
PHYS3330 Undergraduate Electronics Spring 2021
PHYS7560 Graduate Quantum Optics Spring 2020
PHYS4430/5430 Undergraduate Advanced Laboratory Spring 2019
PHYS4430/5430 Undergraduate Advanced Laboratory Spring 2017
PHYS7xxx 2 Graduate Quantum Optics: guest lectures Spring 2017
PHYS4610/420/4630 Physics Honors Seminar Spring 2015
PHYS4510 Undergraduate Optics, guest lecture Fall 2015
PHYS7xxx 2 Graduate Quantum Optics: guest lectures Spring 2015
PHYS3220 Undergraduate Quantum Mechanics: guest lecture
PHYS4610/420/4630 Physics Honors Seminar Fall 2013
PHYS7810-006 Graduate Quantum Optics Spring 2013
PHYS3330 Undergraduate Electronics Fall 2010
PHYS3330 Undergraduate Electronics Fall 2009
REU advisor summers 2015, 2014, 2012, 2009, 2008
PhD Thesis Defenses: 50+
PhD Comprehensive Examination III: 50+
PhD Comprehensive Examination II: 50+
Honors Thesis Defenses: 12

PhD Students

2013 Zilong Chen
2014 Justin G. Bohnet
2015 Joshua M. Weiner
2016 Kevin C. Cox
2017 Matthew A. Norcia
2021 Baochen Wu
2021 Graham P. Greve
2021 Julia R.K. Cline
2024 Chengyi Luo

Postdocs

2017 to October 2019 Juan Muñiz-Silva
2021 to 2023 Vera Schäfer
2024 to present Eliot Bohr

Student Awards

Matthew A. Norcia, IUPAP Early Career Scientist Award presented at ICAP 2024 (2024)
Julia R.K. Cline, DAMOP Topical Group on Precision Measurement and Fundamental Constants Outstanding Poster Award winner (2018)
Matthew A. Norcia, finalist for Deborah Jin Award for Outstanding Doctoral Thesis Research in Atomic, Molecular, or Optical Physics (2018)
Matthew A. Norcia, National Research Council Postdoctoral Research Fellowship (June 2017)
Matthew N. Winchester, Outstanding Graduate for Research (April 2017)
Matthew N. Winchester, Senior Thesis (April 2017)
Kevin C. Cox, ARL Distinguished Postdoctoral Fellowship (Aug. 2016)
Matthew N. Winchester, Goldwater Scholar (April 2016)
Matthew N. Winchester, Astronaut Scholarship (June 2016)
Julia R.K. Cline, NSF Graduate Research Fellowship (2016)
Matthew A. Norcia, JILA Scientific Achievement Award (Feb. 2016)
Kevin C. Cox, Outstanding Presentation Award for "17 dB of Spin Squeezing with QND Measurements", Boulder Laboratories Postdoctoral Poster Symposium, Boulder, CO (2015)
Kevin Cox, ICAP Best Poster "Synchronization in Superradiant Lasers," Washington D.C. (2014)
Matthew A. Norcia, Outstanding Presentation Award for "Reduced Back Action for Improved Spin Squeezing", Boulder Laboratories Postdoctoral Poster Symposium, Boulder, CO (2014)
Justin G. Bohnet, NRC Postdoctoral Fellowship (2013)
Justin G. Bohnet, Outstanding Presentation Award for "A Steady-State Superradiant Raman Laser", Boulder Laboratories Postdoctoral Poster Symposium, Boulder, CO (2013)
Zilong Chen, Beverly Sears Graduate Student Research Grant (2012)
Kevin C. Cox, NDSEG Graduate Fellowship (2012)

Justin G. Bohnet, NSF Graduate Research Fellowship (2010)
Zilong Chen, A*STAR Graduate Research Felllowship (2008)

Outreach

Tara Performing High School Lab Tour and Demo show (Feb. 2024)
CU Wizards Show, "The Physics of Superheroes and Villains!" (Jan. 2020)
CU Undergraduate Visiting Weekend Lab Tours (April 2018)
Mesa Elementary science presentation 4th grade, 50 students (Oct. 2017)
CU Wizards Show, "The Physics of Superheroes and Villains!" (Jan. 2017)
Saturday Afternoon Physics talk and tours, "Quantum Fuzziness and Quantum Certainty" (April 2015)
Lab Tours IFCS-EFTF IEEE International Frequency Control Symposium & European Frequency and Time Forum (April 2015)
DAMOP 2013 High School Educators Presentation—Frontiers of AMO Physics, Quebec City, Quebec, CA (June 2013).
Science Fair Interviewer, Foothill Elementary School (2012)

Popular Press Coverage & Communication

"Viewpoint: Inducing Transparency with a Magnetic Field," Ariel Sommer (June 26, 2017 Physics 10, 70 https://physics.aps.org/articles/v10/70)
Research Highlight, "Lassoing Colors with Atomic Cowpokes," Julie Phillips (July 2017)
Research Highlight, "The Quantum Identity Crisis," Julie Phillips (2014)
Nature Photonics, cover (Sept. 2014)
http://www.nature.com/nphoton/journal/v8/n9/covers/index.html
Research Highlight, "Quantum Entanglement: coming soon to a precision measurement near you," Julie Phillips and J.K. Thompson (2014)
Research Highlight, "The Entanglement Tango," Julie Phillips and Michael Foss-Feig (2012)
Research Highlight, "The Heart of Darkness," J.K. Thompson and Julie Phillips (2012)
Physics.aps.org "Snapshots from the March Meeting—No-Photon Lasers, Hyperbolic Metamaterials, and More" (2014) http://physics.aps.org/articles/v7/27?referer=rss
Science News, "Quantum Time Keeping" (2014)
https://www.sciencenews.org/article/quantum-timekeeping
Nature "Atomic Physics: An almost lightless laser" **484**, 43-44 (April 5, 2012)
Photonics Spectra "Superradiant laser holds bright promise", pg 17-18, June 2012.
Ars Technica, "First superradiant lasers produce nearly no photons (and that's expected)" (2012) http://arstechnica.com/science/2012/04/building-lasers-with-nearly-no-photons/
German Public Radio Deutschlandfunk "Optischer Quantensprung" (2012)
http://www.deutschlandfunk.de/optischer-quantensprung.676.de.html?dram:article_id=29307
Phys.org, "No-photon laser: Physicists demonstrate 'superradiant' laser design" (2012)
http://phys.org/news/2012-04-physicists-superradiant-laser.html
Physics World, "Superradiant' laser created for first time"
http://physicsworld.com/cws/article/news/2012/apr/05/superradiant-laser-created-for-first-time
Science Daily, "New way of lasing: A 'superradiant' laser" (2012)
http://www.sciencedaily.com/releases/2012/04/120404133654.htm

Laser Focus World, "JILA demonstrates new type of 'superradiant' laser" (2012)
http://www.laserfocusworld.com/articles/2012/04/jila-demonstrates-new-type-of-superradiant-laser.html
Photonics.com, "Nearly Lightless Laser Has Bright Future" (2012)
http://www.photonics.com/Article.aspx?AID=50547
CNET, Optics.org, io9, R&D Magazine, The Engineer, Wissenschaft Aktuell, Inovação Tecnológica (2012)
NIST Tech Beat "JILA Superradiant Laser is'A New Way of Lasing'", Laura Ost (2012)
http://www.nist.gov/pml/div689/laser-041712.cfm
Youtube, "NIST/JILA Physicist James Thompson Superradiant Laser" (2012)
http://www.youtube.com/watch?v=nqK4yE5Uzco
Research Highlight, "The Laser with Perfect Pitch," Julie Phillips and J.K. Thompson (2012)
Research Highlight, "Sayonara Demolition Man", Julie Phillips (2010)

Funding Sources

NSF, NIST, DARPA, ARO, ONR, DOE, AFOSR, Lockheed

Full Publication List

(89) "Time-Resolved Pairing Gap Spectroscopy in a Quantum Simulator of Fermionic Superfluidity inside an Optical Cavity," D. J. Young, E. Y. Song, A. Chu, D. Barberena, Z. Niu, V. M. Schäfer, R. J. Lewis-Swan, A. M. Rey, and J. K. Thompson, arXiv: 2408.12640 (Aug 2024).

(88) "A Dissipation-Induced Superradiant Transition in a Strontium Cavity-QED System," E. Y. Song, D. Barberena, D. J. Young, E. Chaparro, A. Chu, S. Agarwal, Z. Niu, J. T. Young, A. M. Rey, and J. K. Thompson, arXiv: 2408.11086 (Aug 2024).

(87) "Entangled Matter-Waves for Quantum Enhanced Sensing," J. D. Wilson, J. T. Reilly, H. Zhang, C. Luo, A. Chu, J. K. Thompson, A. M. Rey, and M. J. Holland, arXiv: arXiv.2406.13616 (June 2024).

(86) "Continuous Momentum State Lasing and Cavity Frequency-Pinning with Laser-Cooled Strontium Atoms," V. M. Schäfer, Z. Niu, J. R. K. Cline, D. J. Young, E. Y. Song, H. Ritsch, and J. K. Thompson, arXiv.2405.20952 (May 2024).

(85) Entanglement Generation in Weakly-Driven Arrays of Multilevel Atoms via Dipolar Interactions, S. Agarwal, A. P. Orioli, J. K. Thompson, and A. M. Rey, arXiv:2405.16101 (May 2024).

(84) "Momentum-Exchange Interactions in a Bragg Atom Interferometer Suppress Doppler Dephasing," Chengyi Luo, Haoqing Zhang, Vanessa P W Koh, John D Wilson, Anjun Chu, Murray J Holland, Ana Maria Rey, and James K Thompson, *Science* **384**, no. 6695, 551–56 (May 2024)

(83) "Hamiltonian Engineering of Collective XYZ Spin Models in an Optical Cavity: From One-Axis Twisting to Two-Axis Counter Twisting Models," Chengyi Luo, Haoqing Zhang, Anjun Chu, Chitose Maruko, Ana Maria Rey, James K. Thompson, arXiv:2402.19429 (February 2024)

(82) "Engineering One Axis Twisting via a Dissipative Berry Phase Using Strong Symmetries," J. T. Young, E. Chaparro, A. P. Orioli, J. K. Thompson, and A. M. Rey, arXiv:2401.06222 (Jan 2024).

(81) "Observing Dynamical Phases of a Bardeen-Cooper-Schrieffer Superconductor in a Cavity QED Simulator," Dylan J. Young, Anjun Chu, Eric Yilun Song, Diego Barberena, David Wellnitz, Zhijing Niu, Vera M. Schäfer, Robert J. Lewis-Swan, Ana Maria Rey, James K. Thompson, *Nature* **625** 679-684 (Jan 2024)

(80) "Direct comparison of two spin squeezed optical clocks below the quantum projection noise limit," John M. Robinson, Maya Miklos, Yee Ming Tso, Colin J. Kennedy, Dhruv Kedar, James K. Thompson, and Jun Ye, *Nature Physics* 1-6 (Jan 2024)

(79) “Control and amplification of Bloch oscillations via photon-mediated interactions,” Haoqing Zhang, Anjun Chu, Chengyi Luo, James K. Thompson, and Ana Maria Rey*, Phys. Rev. Res.* ***5*** L032039 (Sept 2023)

(78) “Ultra narrow linewidth frequency reference via measurement and feedback,” Diego Barberena, Robert J. Lewis-Swan, Ana Maria Rey, James K. Thompson, *Comptes Rendus. Physique*, Online first (2023), pp. 1-14. (June 2023)

(77) “Photon-mediated correlated hopping in a synthetic ladder,” Anjun Chu, Asier Piñeiro Orioli, Diego Barberena, James K. Thompson, and Ana Maria Rey, *Phy. Rev. Res.* **5**, no. 2: L022034 (May 2023)

(76) “Bosonic pair production and squeezing for optical phase measurements in long-lived dipoles coupled to a cavity,” Bhuvanesh Sundar, Diego Barberena, Asier Piñeiro Orioli, Anjun Chu, James K. Thompson, Ana Maria Rey, Robert J. Lewis-Swan, *Phys. Rev. Lett.* **130** 113202 (March 2023)

(75) “Opportunities and Limitations in Broadband Sensing,” Anthony M. Polloreno, Jacob L. Beckey, Joshua Levin, Ariel Shlosberg, James K. Thompson, Michael Foss-Feig, David Hayes, Graeme Smith, *Phys. Rev. Applied* **19**, no. 1: 014029 (Jan 2023)

(74) “Continuous collective strong coupling between atoms and a high finesse optical cavity,” Julia RK Cline, Vera M. Schäfer, Zhijing Niu, Dylan J. Young, Tai Hyun Yoon, and James K. Thompson. *arXiv:2211.00158* (Nov 2022)

(73) “Entanglement-Enhanced Matter-Wave Interferometry in a High-Finesse Cavity”, Graham P. Greve, Chengyi Luo, Baochen Wu, James K. Thompson, *Nature* **610**, no. 7932, 472-477 (Oct 2022)

(72) “Emergent dark states from superradiant dynamics in multilevel atoms in a cavity”, Asier P. Orioli, James K. Thompson, Ana Maria Rey, *PRX* 12 (1) 011054 (March 2022)

(71) “Entropy transfer from a quantum particle to a classical coherent light field”, John P. Bartolotta, Simon B. Jäger, Jarrod T. Reilly, Matthew A. Norcia, James K. Thompson, Graeme Smith, Murray J. Holland, *Phys. Rev. Res.* **4** 013218 (March 2022)

(70) “Resonant light enhances phase coherence in a cavity QED simulator of fermionic superfluidity,” Shane P. Kelly, James K Thompson, Ana Maria Rey, Jamir Marino, *Phys. Rev. Res.* **4**, no. 4 L042032 (Feb 2022)

(69) “Quantum Enhanced Cavity QED Interferometer with Partially Delocalized Atoms in Lattices”, Anjun Chu, Peiru He, James K Thompson, Ana Maria Rey, *Phys. Rev. Lett.* **127** 210401 (Nov 2021)

(68) “Cavity-QED measurements of the 87Sr millihertz optical clock transition and determination of its natural linewidth,” Juan Muniz, Dylan J. Young, Julia R.K. Cline, James K. Thompson, *Phys. Rev. Res.* **3** 023152 (May 2021)

(67) “Site-dependent selection of atoms for homogeneous atom-cavity coupling,” Baochen Wu, Graham P. Greve, Chengyi Luo, James K. Thompson, arXiv:2104.01201 submitted to *PRA* (April 2021)

(66) “Cavity-QED Quantum Simulator of Dynamical Phases of a Bardeen-Cooper-Schrieffer Superconductor,” Robert J. Lewis-Swan, Diego Barberena, Julia R. K. Cline, Dylan J. Young, James K. Thompson, and Ana Maria Rey *Phys. Rev. Lett.* **126**, 173601 (27 April 2021)

(65) “Atom-light entanglement for precise field sensing in the optical domain,” Diego Barberena, Robert J. Lewis-Swan, James K. Thompson, Ana Maria Rey. *Phys. Rev. A* 102 (5) 052615 (Nov. 2020)

(64) “Facilitating spin squeezing generated by collective dynamics with single-particle decoherence,” Kris Tucker, Diego Barberena, Robert J. Lewis-Swan, James K. Thompson, Juan G. Restrepo, and Ana Maria Rey *Phys. Rev. A* 102 (5) 051701 (Nov. 2020)

(63) “A cavity-QED protocol for precise field sensing in the optical domain,” Robert J. Lewis-Swan, Diego Barberena, Juan A. Muniz, Julia RK Cline, Dylan Young, James K. Thompson, Ana Maria Rey. *Physical Review Letters* 124 (19), 193602 (May 2020)

(62) “Exploring dynamical phase transitions with cold atoms in an optical cavity,” Juan A. Muniz, Diego Barberena, Robert J. Lewis-Swan, Dylan J. Young, Julia R.K. Cline, Ana Maria Rey, and James K. Thompson. *Nature* **580** 602-607 (April 2020)

(61) “Driven-dissipative quantum dynamics in ultra long-lived dipoles in an optical cavity,” D Barberena, RJ Lewis-Swan, James K Thompson, Ana Maria Rey, *Phys. Rev. A*, 99, 053411 (May 2019).

(60) “Continuous real-time tracking of a quantum phase below the standard quantum limit,” Athreya Shankar, Graham P Greve, Baochen Wu, James K Thompson, Murray Holland, *Phys. Rev. Lett.* **122**, 233602 (June 2019)

(59) Juan A. Muniz, Julia RK Cline, Matthew A. Norcia, and James K. Thompson. "An active optical frequency reference using a pulsed superradiant laser." In *Optical, Opto-Atomic, and Entanglement-Enhanced Precision Metrology*, vol. 10934, p. 109342B. International Society for Optics and Photonics, (March 2019)

(58) “Laser cooling by sawtooth-wave adiabatic passage,” John P. Bartolotta, Matthew A. Norcia, Julia R. K. Cline, James K. Thompson, and Murray J. Holland *Phys. Rev. A* **98**, 023404 (Aug. 2018)

(57) “Robust spin squeezing via photon-mediated interactions on an optical clock transition.” Robert J. Lewis-Swan, Matthew A. Norcia, Julia R. K. Cline, James K. Thompson, Ana Maria Rey, *Phys. Rev. Lett.* **121** (7), 070403 (Aug. 2018)

(56) “Cavity-Mediated Collective Spin-Exchange Interactions in a Strontium Superradiant Laser,” Matthew A. Norcia, Robert Lewis-Swan, Julia R.K. Cline, Bihui Zhu, Ana Maria Rey, James K. Thompson, *Science* **361**, 259-262 (July 2018)

(55) “Robust Narrow-Line Magneto-Optical Trap using Adiabatic Transfer,” Juan A. Muniz, Matthew A. Norcia, Julia R. K. Cline, and James K. Thompson, under review *Phys. Rev. A*, arXiv1806.00838 (June 2018)

(54) “Frequency measurements of superradiance from the strontium clock transition,” Matthew A. Norcia, Julia R.K. Cline, Juan A. Muniz, Jun Ye, James K. Thompson, *Phys. Rev. X* 8, 021036 (May 2018)

(53) “Laser Cooling with Adiabatic Transfer on a Raman Transition,” Graham P. Greve, Baochen Wu, and James K. Thompson, *New J. Phys*. ***21 073045*** (July 2019)

(52) “Narrow-line Laser Cooling by Adiabatic Transfer,” Matthew A. Norcia, Julia R.K. Cline, John P. Bartolotta, Murray J. Holland, James K. Thompson, *New J. Phys.* **20,** 023021 (Feb. 2018)

(51) “Role of atoms in atomic gravitational-wave detectors,” Matthew A. Norcia, Julia R. K. Cline, and James K. Thompson, *Phys. Rev. A* **96**, 042118 (Oct. 2017)

(50) “Magnetically-Induced Optical Transparency on a Forbidden Transition in Strontium for Cavity-Enhanced Spectroscopy,” Matthew N. Winchester, Matthew A. Norcia, Julia R.K. Cline, James K. Thompson, *Phys. Rev. Lett.* **118**, 263601 (June 2017)

(49) “Phase synchronization inside a superradiant laser,” Joshua M. Weiner, Kevin C. Cox, Justin G. Bohnet, and James K. Thompson*, Phys. Rev. A* **95**, 033808 (March 2017)

(48) “Spatially homogeneous entanglement for matter-wave interferometry created with time-averaged measurements,” Kevin C. Cox, Graham P. Greve, Baochen Wu, and James K. Thompson, *Phys. Rev. A* **94**, 061601(R) (Dec. 2016)

(47) “Steady-state superradiance with Rydberg polaritons,” Zhe-Xuan Gong, Minghui Xu, Michael Foss-Feig, James K. Thompson, Ana Maria Rey, Murray Holland, Alexey V. Gorshkov, arXiv:1611.00797 (Nov. 2016)

(46) “Superradiance on the millihertz linewidth strontium clock transition,” Matthew A. Norcia, Matthew N. Winchester, Julia R.K. Cline, James K. Thompson, *Science Advances* 2016;2:e1601231 (Oct. 2016)

(45) "A Cold-Strontium Laser in the Superradiant Crossover Regime," Matthew A. Norcia and James K. Thompson, *Phys. Rev. X* **6**, 011025 (March 2016)

(44) "Deterministic Squeezed States with Collective Measurements and Feedback," Kevin C. Cox, Graham P. Greve, Joshua M. Weiner, and James K. Thompson *Phys. Rev. Lett*. **116**, 093602 (March 2016)

(43) "Strong Coupling on a Forbidden Transition in Strontium and Nondestructive Atom Counting," Matthew A. Norcia, James K. Thompson, *Phys. Rev. A,* **93**, 023804 (Feb. 2016)

(42) "Simple Laser Stabilization to the Strontium 88Sr Transition at 707 nm," Matthew. A. Norcia and James K. Thompson*, Rev. Sci. Instrum*. **87**, 023110 (Feb. 2016)

(41) "Generating entanglement with low noise probing of an optical cavity," Kevin C. Cox, Joshua M. Weiner, Graham Greve, James K. Thompson, *Frequency Control Symposium & the European Frequency and Time Forum (FCS), 2015 Joint Conference of the IEEE International Proceedings* 351-356 (April 2015)

(40) "Atomic doughnuts from single photons," James K. Thompson, *Nature News & Views* **519**, 420-422 (March 2015)

(39) "Reducing Collective Quantum State Rotation Errors with Reversible Dephasing," Kevin C. Cox, Matthew A. Norcia, Joshua M. Weiner, Justin G. Bohnet, James K. Thompson, *Appl. Phys. Lett.* **105**, 261102 (Dec. 2014)

(38) "Phase diagram for injection locking a superradiant laser," Kevin C. Cox, Joshua M. Weiner, James K. Thompson, *Phys. Rev. A.* **90**, 053845 (Nov. 2014)

(37) "Reduced spin measurement back-action for a phase sensitivity 10 times beyond the standard quantum limit," Justin G. Bohnet, Kevin C. Cox, Matthew A. Norcia, Joshua M. Weiner, Zilong Chen, J. K. Thompson, Article in *Nature Photonics* **8**, 731-736 (Sept. 2014).

(36) "Cavity-Aided Nondemolition Measurements", Zilong Chen, Justin G. Bohnet, Joshua M. Weiner, Kevin C. Cox, J.K. Thompson, *Phys. Rev. A* **89**, 043837 (April 2014)

(35) "Linear Response Theory for Superradiant Laser," J.G. Bohnet, Z. Chen, J.M. Weiner, K.C. Cox, J.K. Thompson, *Phys. Rev. A* **89**, 013806 (Jan. 2014)
Editor's Suggestion

(34) "Synchronization of Two Ensembles of Atoms," Minghui Xu, D. A. Tieri, E. C. Fine, J.K. Thompson, M.J. Holland, *Phys. Rev. Lett.* **113**, 154101 (Oct. 2014)

(33) "Active and passive sensing of collective atomic coherence in a superradiant laser," Justin G. Bohnet, Zilong Chen, Joshua M. Weiner, Kevin C. Cox, J. K. Thompson, *Phys. Rev. A* **88**. 013826 (July 2013)

(32) "A Quasi-Continuous Superradiant Raman Laser with <1 Intra-cavity Photon," J. G. Bohnet, Z. Chen, J. M. Weiner, K. C. Cox, D. Meiser, M. J. Holland, J. K. Thompson, Proceedings of the 23rd International Conference on Atomic Physics, *EPJ Web of Conferences* **57**, 03003 (Aug. 2013).

(30) "Relaxation oscillations, stability, and cavity feedback in a superradiant Raman laser," J. G. Bohnet et al, *Phys. Rev. Lett.* **109**, 253602 (2012).

(29) "Superradiant Raman laser magnetometer," J. M. Weiner, K. C. Cox, J. G. Bohnet, Z. Chen, J.K. Thompson, *Appl. Phys. Lett.* **101**, 261107 (2012)

(28) "Steady-state many-body entanglement of hot reactive fermions," M. Foss-Feig, A. J. Daley, J. K. Thompson, A. M. Rey, *Phys. Rev. Lett.* **109**, 230501 (2012)

(27) "General formalism for evaluating the impact of phase noise on Bloch vector rotations," Z. Chen, J. G. Bohnet, J. M. Weiner, J. K. Thompson, *Phys. Rev. A* **86** , 032313 (2012)

(26) "A Steady State Superradiant Laser with <1 Intracavity Photon", J. G. Bohnet, Z. Chen, J. M. Weiner, D. Meiser, M. J. Holland, J.K. Thompson, *Nature* **484** 78-81, April 5 (2012).

(25) "A Low Phase Noise Microwave Source for Atomic Spin Squeezing Experiments in ^{87}Rb", Z. Chen, J. G. Bohnet, J. M. Weiner, and J. K. Thompson, *Rev. Sci. Instr.* **83**, 044701 (2012).

(24) "Conditional Spin Squeezing of a Large Ensemble via the Vacuum Rabi Splitting", Z. Chen, J. G. Bohnet, S. R. Sankar, J. Dai, J.K. Thompson, *Phys. Rev. Lett.* **106**, 133601 (2011)

(23) "Interfacing Collective Atomic Excitations and Single Photons." J. Simon, H. Tanji, J.K. Thompson, V. Vuletic, *Physical Review Letters* **98**, 183601 (2007)

(22) "External-Feedback Laser Cooling of Gases.", V. Vuletic, A. T. Black, J.K. Thompson, J. Simon, *Physical Review A* **75**, 051405(R) (2007)

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(13) "An ion balance for ultra-high precision atomic mass measurements." S. Rainville, J.K.Thompson, D.E. Pritchard, *Science*, **303**, 334, (2004)

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(10) "Single-ion mass spectrometry at 100 ppt and beyond." S. Rainville, J.K. Thompson, D.E. Pritchard, *Canadian Journal of Physics* **80** 1329, (2002).

(9) "Precise measurements of the masses of Cs, Rb, and Na – A new route to the fine structure constant." S. Rainville, M.P. Bradley, J.V. Porto, J.K. Thompson, D.E. Pritchard, *Hyperfine Interactions* **132** 177, (2001)

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(2) “Operation of a radio-frequency ion source in a tandem electrostatic accelerator.” E.G. Myers, J.K. Thompson, *et al*., *Nuclear Instruments and Methods,* **372** 280, (1996)

(1) “Measurement of the $1s2s\,^1S_0 – 1s2p\,^3P_1$ interval in helium-like nitrogen.” E.G. Myers, J.K. Thompson, et al., *Physical Review Letters,* **75** 3637, (1995)

Talks

1. "Quantum simulation and sensing using light-mediated interactions," New Perspectives in Many-body Physics with Quantum Optical Systems, KITP Kavli Institute of Theoretical Physics, Univ. of California, Santa Barbara, CA (Oct 2024)

2. "Cavity-Mediated Interactions for Quantum Sensing and Simulation," Lectures Doctoral school on quantum technologies and quantum fluids, les Houches, Chamonix, France (Oct 2024)

3. "Quantum simulation and sensing using light-mediated interactions," National Academy of Sciences, Washington, DC (Oct 2024)

4. "Quantum simulation and sensing using light-mediated interactions," US-Japan Seminar on Quantum Electronics, Stanford Univ., Palo Alto, CA (Sep 2024)

5. "Quantum simulation and sensing using light-mediated interactions," Joint Quantum Institute Seminar JQI, U. Maryland, College Park, MD (Sep 2024)

6. "Hot Atoms and Light Cooperating," DARPA, Arlington, VA (Aug 2024)

7. "Controlling cavity-mediated interactions for quantum sensing and simulation," Challenges and perspectives in resonator-mediated many-body physics: From atoms to solid state, ETH, Zurich, Switzerland (June 2024)

8. "Observing dynamical phases of BCS superconductors in a cavity QED simulator," DAMOP, Fort Worth, TX (June 2024)

9. "Cavity-Mediated Interactions for Quantum Sensing and Simulation," Quantum Systems in Noronha, Fernando de Noronha, Brazil (Nov. 2023)

10. "Cavity-Mediated Interactions for Quantum Sensing and Simulation," International Symposium on Quantum Physics and Quantum Information Sciences, Beijing, China (Oct 2023)

11. "Hamiltonian Engineering in Matter wave Interferometers: QND, 1-Axis Twisting, 2-Axis Twisting, and Mossbauer-like Collective Recoil," Frontiers of Quantum Metrology: Fundamental Physics, Unexpected Connections, and Novel Applications, Kavli Institute for Theoretical Physics KITP, Santa Barbara, CA (Oct 2023)

12. "Cavity-Mediated Interactions for Quantum Metrology and Simulation," Gordon Research Conference on Atomic Physics, Newport, RI (June 2023)

13. “Collective Physics in Cavity-QED: Quantum Sensing and Quantum Simulation,” National Academy of Science and Engineering Review, Boulder, CO (May 2023)

14. “Collective Physics in Cavity-QED: Dynamical Phases of BCS Superconductors,” Ultra-Quantum Matter, Boulder, CO (May 2023)

15. “Squeezed Matterwave Interferometry & Momentum-Exchange Interactions,” Lorentz Center, Leiden, Netherlands (April 2023)

16. “Exploring Collective Physics in Cavity-QED: Entanglement, Quantum Sensing, & Non-Equilibrium Many-body Simulations,” Seminar, Hamburg, Germany (April 2023)

17. “Twisting and binding matter-waves: cavity-mediated momentum exchange,” Q-SENSE Seminar, Boulder, CO (March 2023)

18. “Squeezing Enhanced Matter-wave Interferometry in a High Finesse Cavity,” SPIE Photonics West, San Francisco, CA (Jan 2023)

19. “Entanglement Enhanced Matter-wave Interferometery in a High Finesse Cavity,” PQE Physics of Quantum Electronics, Snowbird, UT (Jan 2023)

20. “Squeezed Inertial Sensing,” Lockheed Review, Boulder, CO (Oct 2022)

21. “Infinite Range Interactions for Many-body Physics and Metrology,” EMMI Workshop on Long Range Interactions International Conference on Atomic Physics, keynote talk, Innsbruck, Austria (Sept 2022)

22. “Cavity-QED for Quantum Sensing,” Q-Sense Inaugural Summer School , Boulder, CO (Aug 2022)

23. “Entanglement-Enhanced Matter-Wave Interferometry in a High-Finesse Cavity,” ICAP International Conference on Atomic Physics, invited talk, Toronto, Canada (July 2022)

24. “Entanglement for Quantum Sensing in Matter-wave Interferometers, Clocks, and Molecules,” Q-SENSE Annual Meeting, Boulder, CO (June 2022)

25. “Entanglement-Enhanced Matter-Wave Interferometry in a High-Finesse Cavity,” DAMOP Invited talk, Orlando, FL (June 2022)

26. “Experiments in Many-body Cavity QED: Entangled Matterwave Interferometers, Superradiant Lasers, and Dynamical Phase Transitions”, Quantum Science Seminar Mainz, Virtual (Jan 2022)
    Video

27. "Experiments in Collective Cavity QED", Physics Frontier Center, JILA, Boulder, CO (Oct 2021)

28. "Twists, Gaps, Dynamical Phases, and Supperadiant Emission on Ultra-Narrow Optical Transitions," COSCALI Collective Scattering of Light, Porqerolles, France (Sept 2021)

29. "Cavity QED systems: metrology with collective states," Boulder School for Condensed Matter and Materials Physics: Ultracold Matter, Virtual (July 2021)
    Lecture 1, Lecture 2, Lecture 3

30. "Cavity-enhanced non-destructive measurements for determination of the strontium clock transition linewidth with 30 microhertz resolution," SPIE Photonics West Optical and Quantum Sensing and Metrology (Mar 2021)
    Video

31. "Breaking Quantum and Thermal Limits with Collective Physics," Physics Colloquium, ETH, Zurich, Switzerland (Dec 2020)

32. "Twists, Gaps, Dynamical Phases, and Supperadiant Emission on Ultra-Narrow Optical Transitions," VAMOS Virtual AMO Seminar (July 2020)
    Video

33. "Spin Exchange Interactions and Dynamical Phase Transition in Strontium," International Conference on Quantum Optics, Obergurgl, Austria (Feb 2020)

34. "Breaking Quantum and Thermal Limits with Collective Physics," Colloquium Center for Fundamental Physics, Northwestern University, Chicago, IL (Nov 2019)

35. "Breaking Quantum and Thermal Limits with Collective Physics," Physics Colloquium, Columbia University, New York, NY (Oct 2019)

36. "Breaking Quantum and Thermal Limits with Collective Physics," Plenary Talk, LXII Congreso Nacional de Física, Villahermosa, Mexico, (Oct 2019)

37. "Breaking Quantum and Thermal Limits with Collective Physics," Quantum Africa 5, Stellenbosch,_South Africa (Sept 2019)

38. "Collective Physics with Atoms and Light," Quantum Metrology & Physics Beyond the Standard Model, JILA PFC, Boulder, CO (Aug 2019)

39. "Twists, gaps, and superradiant emission on a millihertz linewidth optical transition," Quantum Metrology & Physics Beyond the Standard Model, Hannover, Germany (June 2019)

40. "Extreme Sensing," ATN DARPA Review, Boulder, CO (May 2019)

41. “Quantum Sensing and Networks,” CUbit/Lockheed presentation, Boulder, CO (Apr. 2019)

42. “Superradiance on a milliHertz linewidth transition,” Dept. of Physics Colloquium, University of Michigan, An Arbor, MI (Feb. 2019)

43. “Superradiance on a milliHertz linewidth transition,” Dept. of Physics & Applied Physics Colloquium, Stanford University, Palo Alta, CA (Jan. 2019)

44. “Superradiance on a milliHertz linewidth transition,” European Trapped Ion Conference, Weizmann Institute, Rehovet, Israel (Nov. 2018)

45. “Cavity-mediated Spin-Exchange Interactions on the Strontium Clock Transition,” MIT/Harvard Center for Ultracold Atoms Seminar, Cambridge, MA (Nov. 2018)

46. “Cavity-mediated Spin-Exchange Interactions on the Strontium Clock Transition,” Quantum Optics IX, Cartagena de Indias, Columbia (Oct. 2018)

47. “Cavity-mediated Spin-Exchange Interactions on the Strontium Clock Transition,” Japan-US Seminar on Quantum Electronics and Laser Spectroscopy, Kanazawa, Japan (Sept. 2018)

48. “Cavity-mediated Spin-Exchange Interactions on the Strontium Clock Transition,” Gordon Research Conference on Quantum Science: Non-Equilibrium Quantum Matter and Scalable Quantum Computing, Stonehill College, Easton, MA (July 2018)

49. “A magneto-optical trap and laser cooling using adiabatic passage on a forbidden transition in strontium,” Physics of Quantum Electronics (PQE), Snowbird, UT (Jan. 2018)

50. “Collective Measurement for Creating Highly Squeezed Spin States of Rubidium,” Seminar, Dept. of Physics and Astronomy, Seoul National University, Seoul, Korea (Nov. 2017)

51. “Superradiance on a millihertz linewidth optical transition in laser-cooled strontium atoms,” Samsung Science and Technology Foundation Global Research Symposium on Coherent Quantum Control of Atom-Photon Interaction, Seoul, Korea (Oct. 2017)

52. “Quantum Many-body States for Precision Measurement,” Many-body Cavity QED ITAMP Workshop, Harvard Center for Astrophysics, Cambridge, MA (Oct. 2017)

53. “Breaking Quantum and Thermal Limits: things we can do with many atoms that we cannot do with one,” Visionary Speaker, Frontiers in Optics/Laser Science, Washington D.C. (Sept. 2017)

54. “Breaking Quantum and Thermal Limits: things we can do with many atoms that we cannot do with one,” Physical Measurement Laboratory Colloquium, NIST, Gaithersburg, MD (Sept. 2017)

55. “Extreme sensing using collective quantum physics,” DARPA Review, Boulder, CO (June 2017)

56. “Quantum many-body states for sensors,” General Dynamics Overview, Boulder, CO (April 2017)

57. “Extreme sensing using collective quantum physics,” JILA Physics Frontier Center, Boulder, CO (Feb. 2017)

58. “The first observation of superradiant emission on a millihertz linewidth optical transition in strontium,” SPIE Photonics West, San Fransisco, CA (Jan. 2017)

59. “Extreme Sensing,” DARPA Review, DARPA Arlington, VA (Dec. 2016)

60. “Breaking Quantum and Thermal Limits,” DARPA QUASAR, George Mason Univ., Arlington, VA (Sept. 2016)

61. “Clocks for Probing New Physics,” New Pathways for Physics Beyond the Standard Model Workshop, Univ. of California Berkeley, Berkeley, CA (June 2016)

62. “Breaking Quantum and Thermal Limits on Precision Measurements,” DAMOP 2016 Invited Talk in Cold Atoms in Optical Cavities session, Providence, RI (May 2016)

63. “Breaking Quantum and Thermal Limits,” DARPA QUASAR, JILA, Boulder, CO (April 2016)

64. “Breaking Quantum and Thermal Limits on Precision Measurements,” Quantum Optics 2016 Obergurgl, Austria (Feb 2016)

65. “Collective atom counting and first lasing on a millihertz linewidth optical transition,” International Workshop on Ultracold Group II atoms, Paris Observatory, Paris, France (Feb 2016)

66. “Breaking Quantum and Thermal Limits,” SPIE Photonics West, San Fransisco, CA (Feb 2016)

67. “Breaking Quantum and Thermal Limits,” AMO Seminar, Stanford University, Palo Alto, CA (Nov. 2015)

68. “Quantum Accuracy and Quantum Fuzziness,” Physics Colloquium, UCLA, Los Angeles, CA (Nov. 2015)

69. "Quantum Accuracy and Quantum Fuzziness," Physics Colloquium, Colorado School of Mines, Golden, CO (Nov. 2015)

70. "Breaking Quantum and Thermal Limits," DARPA QUASAR, UCSB, Santa Barbara, CA (Oct 2015)

71. "Overcoming Quantum and Thermal Limits for Precision Measurements," 12th US-Japan Seminar on many body quantum systems, Madison, WI (Sept. 2015)

72. "Breaking Quantum and Thermal Limits," Physics Research Opportunities Seminar, Boulder, CO (Sept. 2015)

73. "Quantum Many-Body States for Precision Measurement," NRC Review Panel, Boulder, CO (Sept. 2015)

74. "Quantum Fuzziness & <1 Photon Laser," REU Summer Program, Boulder, CO (July 2015)

75. "Collective Effects for Precision Measurement," University of Amsterdam, Amsterdam, Netherlands, (May 2015)

76. "Collective Effects for Precision Measurement," Niels Bohr Institute, Copenhagen, Denmark, (May 2015)

77. "Entanglement via Coherence Preserving Measurements," Continuous Variable Entanglement in Atomic Systems, WR Heraeus Seminar, Bad Honnef, Germany (May 2015)

78. "Quantum Fuzziness and Quantum Certainty," Saturday Morning Physics, Boulder, CO (April 2015)

79. "Enhancing Clocks with Collective Effects: Spin Squeezing and Superradiance," IFCS-EFTF IEEE International Frequency Control Symposium & European Frequency and Time Forum, Denver, CO (April 2015)

80. "Collective Effects for Precision Measurements," DARPA QUASAR, Boston, MA (March 2015)

81. "Table Top Physics in Boulder", graduate recruiting weekends, Boulder, CO (March and April 2015)

82. "Collective Effects for Precision Measurements," Physics Frontier Center, Boulder, CO (Feb. 2015)

83. "Quantum Fuzziness and Quantum Certainty," James Franck Institute 1st Tuesday Colloquium, Univ. of Chicago, Chicago, IL (Oct. 2014)

84. “Collective Effects for Enhancing Frequency Metrology,” DARPA QUASAR, Broomfield, CO (Sept. 2014)

85. “Collective Effects for Enhancing Quantum Metrology,” IMODS/NIST Workshop on Quantum Technologies, NIST, Boulder, CO (June 2014)

86. “Dynamics of a Superradiant Laser, ” DAMOP Focus Session, Madison, WI (June 2014)

87. “Table Top Physics in Boulder”, graduate recruiting weekends, Boulder, CO (March and April 2014)

88. “Collective Effects for Enhancing Frequency Metrology,” DARPA QUASAR, Long Beach, CA (Jan. 2014)

89. “10 dB of Observed Squeezing via Collective Measurement,” Physics of Quantum Electronics PQE, Snowbird, UT (Jan. 2014)

90. “Exploring Collective Effects for Precision Measurement,” Physics Colloquium, Dept. of Physics, Univ. of Washington, Seattle, WA (Nov. 2013)

91. “Optical Coherence Times Approaching One Hour,” NIST Colloquium, NIST, Gaithersburg, MD (Nov. 2013)

92. “Exploring Collective Effects for Precision Measurement,” Joint Quantum Institute, Univ. of Maryland, College Park, MD (Oct. 2013)

93. “Breaking Quantum and Thermal Limits,” CU Physics Research Opportunities Seminar, Boulder, CO (Sept. 2013)

94. “Superradiant Lasers for Advanced Communication,” NIST Advanced Communication Workshop, NIST, Boulder, CO (Sept. 2013).

95. “Exploring Collective Effects for Precision Measurement,” 6th International Symposium on Modern Problems of Laser Physics, Novosibirsk, RS (August, 2013)

96. “Exploring Collective Effects for Precision Measurement,” Gordon Research Conference on Atomic Physics, Newport, RI (June, 2013)

97. “A Cold-Atom Laser with <1 Intracavity Photon,” CLEO/QELS2013, San Jose, CA, (June, 2013).

98. “Exploring Collective Effects for Precision Measurement,” AMO Seminar, Univ. of California, Berkeley, CA (May 2013)

99. “Table Top Physics in Boulder”, graduate recruiting weekends, Boulder, CO (March and April 2013)

100. “Superradiant Lasers,” DARPA QuASAR Workshop, JILA, Boulder, CO (March, 2013)

101. “Superradiant Laser with <1 Intracavity Photon,” Physics Frontier Center Talk, JILA, Boulder, CO (November, 2012)

102. “Superradiant Laser with <1 Intracavity Photons,” NIST on a Chip Workshop, Boulder, CO (November, 2012)

103. “Superradiant Laser with <1 Intracavity Photons,” APS Four Corners Sectional Meeting, New Mexico Inst. of Mining and Technology, Socorro, NM (October, 2012)

104. “Ensemble Cavity-QED for Quantum Metrology,” Dept. of Physics Colloquium, Colorado State University, Fort Collins, CO (October, 2012)

105. “A Cold-Atom Superradiant Laser with <1 Intracavity Photon,” Frontiers in Optics, Rochester, NY (October, 2012)

106. “Spin Squeezing a Large Atomic Ensemble,” Division of Laser Science, Rochester, NY (October, 2012)

107. “Superradiant laser with <1 Intracavity photon”, Optical, Electronic, and Quantum Systems Seminar OEQS, U.C. Boulder, CO (September, 2012)

108. “Superradiant laser with <1 Intracavity photon”, DARPA QuASAR, Santa Barbara, CA, (August, 2012)

109. “Superradiant laser with <1 Intracavity photon”, Hot Topics Session, ICAP, Paris, France (July, 2012)

110. “Superradiant laser with <1 Intracavity photon”, Hot Topics Session, DAMOP, Anaheim, CA (June, 2012)

111. “Ensemble Cavity-QED and Precision Metrology”, NIST Ion Trapping Group, Boulder, CO (May, 2012)

112. “Table Top Physics in Boulder”, graduate recruiting weekends, Boulder, CO (March and April 2012)

113. “Breaking Quantum and Thermal Limits”, REU talk, Boulder, CO (July, 2012)

114. “Squeezed Atoms and a Superradiant Laser with <1 Photon”, MIT/Harvard Center for Ultracold Atoms, Harvard University, Cambridge, MA (April, 2012)

115. "Ensemble Cavity-QED and Precision Metrology", Southwest Quantum Information and Technology (SQuInT), Albuquerque, NM (Feb, 2012)

116. "Conditional Spin Squeezing of a Large Ensemble via the Vacuum Rabi Splitting" Frontiers of Matterwave Optics, Obergurgl, Austria (2011)

117. "Squeezing Quantum Fuzziness" JILA Colloquium Boulder, CO (2011)

118. "Squeezing of a Large Atomic Ensemble" NIST Time and Frequency Division Seminar Boulder, CO (2011)

119. "Breaking Quantum and Thermal Limits", CU Graduate Student Seminar (2011)

120. "Squeezing a Large Atomic Ensemble" Quantum Based Measurements NIST Workshop Breckenridge, CO (2010)

121. "Beating Projection Noise" Colloquium, Physics Dept. U. of Nevada, Reno, NV (2010)

122. "Coherence Preserving Quantum Nondemolition Measurements" Quantum Assisted Sensing and Readout Workshop (2010)

123. "Fundamentals of Cavity-QED", Michigan Quantum Summer School (2010)

124. "Beating Quantum Projection Noise", Michigan Quantum Summer School (2010)

125. "Collective Interactions between Atoms and Light", Michigan Quantum Summer School (2010)

126. "Can We Make Precision Measurements More Precise?" DAMOP (2008)

127. "Efficient Coupling of Atoms and Light and World Record Single-Ion Mass Comparisons" Optical Science and Engineering Program, University of Colorado at Boulder (2006)

128. "Efficient Coupling of Atoms and Light" MIT-Harvard Center for Ultracold Atoms (2006)

129. "Efficient Coupling of Atoms and Light" Texas A&M University (2006)

130. "Efficient Coupling of Atoms and Light" University of California Berkeley (2006)

131. "Efficient Coupling of Atoms and Light" Stanford University (2006)

132. "Efficient Coupling of Atoms and Light" Georgia Institute of Technology (2006)

133. "Efficient Coupling of Atoms and Light" College of William and Mary (2006)

134. "Efficient Coupling of Atoms and Light" University of Delaware (2006)

135. "Spectrally-Bright Photon Pairs Generated using Atomic Ensembles" Photonics West 2006, San Jose, CA (2006)

136. "Efficient Coupling of Atoms and Light" JILA, Boulder, CO (2006)

137. "High Efficiency Conversion of Spin-Gratings into Photons." Control and Manipulation of Quantum Systems, Ascona, Switzerland (2005)

138. "Testing $E=mc^2$ with a Two-Ion Balance." New England Meeting of the American Association of Physics Teachers, Cambridge, MA (2005)

139. "A Two-Ion 'Balance': a precision experiment with many implications." Thesis Prize Session Talk, DAMOP 2004, Tuscon, AZ (2004)

140. "Towards a Triggerable Single-Mode Single-Photon Source", MIT-Harvard Center for Ultracold Atoms (2004)

141. "A Two-Ion Balance and Polarization Forces." NIST Gaithersburg, MD (2003)

142. "A Two-Ion Balance and Polarization Forces." NIST Boulder, CO (2003)

143. "A Two-Ion Balance and Polarization Forces.", JILA, Boulder, CO (2003)

144. "A Two-Ion Balance and Polarization Forces." Stanford University (2003)

145. "A Two-Ion Balance and Polarization Forces." California Institute of Technology (2003)

146. "Does $E = mc^2$? Mass Comparisons at 10 ppt", MIT-Harvard Center for Ultracold Atoms (2003)

147. "A Two-Ion Waltz.", DAMOP 2003, Boulder, CO, (2003)

148. "Simultaneous Cyclotron Frequency Comparisons for Mass Spectrometry at 10 ppt (+ something unexpected!)" Trapped Charged Particles and Fundamental Interactions, Wildbad Kreuth, Germany, (2002)

149. "Progress Towards Mass Spectrometry at 10 ppt." DAMOP 2002, Williamsburg, VA, (2002)

150. “Electronic Refrigeration and Precision Mass Spectrometry”, DAMOP 2001, London, Ontario, CA (2001)