7:00PM **Sunday, Jan. 7**, Evening Reception in honor of 2024 PQE heroes at Golden Cliff Room

ver. Jan. 7, 2024

Monday Morning January 8, 2024

7:00 **Continental breakfast** [Ballroom 1+2]

Plenary Session [Ballroom 1+2] Olga Kocharovskaya, Chair

7:30 **Marlan Scully**, *Texas A&M University*, "Quantum Optics in Curved Space-Time"

8:00 **Paul Corkum**, *University of Ottawa and National Research Council Canada*, "A Plasma Perspective on Attosecond Science"

8:30 **Mikhail Lukin**, *Harvard University*, "Exploring quantum error correction frontier using programmable atom arrays"

	Entangling quantum optics with gravity Ballroom 1 Marlan Scully, Chair	*Attosecond physics I* Magpie A Paul Corkum, Chair	*Rydberg atom arrays* Magpie B Mikhail Lukin, Chair	*AI in photonics* Wasatch A Lan Yang, Chair
9:10	**Anatoly Svidzinsky**, *Texas A&M University*, "Time reflection of light from a quantum perspective and Minkowski vacuum entanglement"	**Uwe Thumm**, *Kansas State University*, "Towards photoelectron imaging of adsorbate-covered surfaces and plasmonic nanoparticles with attosecond-nanometer spatio-temporal resolution"	**Adam Kaufman**, *JILA, CU Boulder, NIST*, "Microscopically-controlled arrays of alkaline-earth atoms"	**Liang Feng**, *University of Pennsylvania*, "Lithography-free integrated photonics for reconfigurable computing acceleration"
9:30	**Arash Azizi**, *Texas A&M University*, "Unruh meets Wigner-Weisskopf: Entanglement suppresses spontaneous emission"	**Shambhu Ghimire**, *SLAC National Accelerator Laboratory and Stanford University*, "Applying attosecond tools for materials study: probing topological phase transitions"	**Hannes Pichler**, *University of Innsbruck & IQOQI*, "Universal quantum computation from global driving fields"	**Arka Majumdar**, *University of Washington*, "Challenges and Opportunities for Optical Neural Network"
9:50	**Igor Pikovski**, *Stevens Institute of Technology & Stockholm University*, "Graviton Detection with Quantum Sensing"	**Julia Mikhailova**, *Princeton University*, "Plasma Optics for Manipulating Ultrafast Ultra-Intense Light"	**Shimon Kolkowitz**, *University of California, Berkeley*, "Applying techniques from neutral atom quantum computing to optical atomic clocks and quantum sensors"	**Aydogan Ozcan**, *UCLA*, "Diffractive Information Processing and Computational Imaging"
10:10	**Reed Nessler**, *Texas A&M University*, "Radiation from atoms falling through a wormhole"	**Barry Walker**, *University of Delaware*, "Dynamics of Full Molecular Ionization by a Strong Laser Field in Carbon Monoxide"	**Eugene Demler**, *ETH Zurich*, "Single-spin qubit magnetic spectroscopy of correlated states of electrons"	**Lan Yang**, *Washington University in St. Louis*, "AI-empowered photonic sensing and spectroscopy"

10:30 — Break —

Plenary Session [Ballroom 1+2] Jens Biegert, Chair

10:50 **Peter Nordlander**, *Rice University*, "Plasmon-Enhanced Photocatalysis for Sustainability"

11:20 **Mikhail Ivanov**, *Max Born Institute*, "Attosecond Science: Back to the Quantum Future"

	Frontiers in nanophotonics I Ballroom 1 Peter Nordlander, Chair	*Attosecond physics II* Magpie A Mikhail Ivanov, Chair	*Emerging materials and devices for quantum photonics* Magpie B Zubin Jacob, Chair	*Structured light* Wasatch A Ebrahim Karimi, Chair
12:00	**Steve Cronin**, *University of Southern California*, "Hot Electron Photocatalysis in Plasmon-resonant Grating Structures"	**Paraskevas Tzallas**, *FORTH-IESL, Greece, and ELI-ALPS, Hungary*, "Non-linear optics using intense optical Schrödinger 'cat' states generated through intense laser-matter interactions"	**Hong Tang**, *Yale University*, "Superconducting electro-optic modulator for photonic link from single flux quantum circuits to room temperature"	**Ebrahim Karimi**, *University of Ottawa*, "Photonics Quantum States: from Knots to Communication, and to Sonoluminescence"
12:20	**Jason Valentine**, *Vanderbilt University*, "Meta-imagers for Machine Vision"	**Matan Even Tzur**, *Technion - Israel Institute of Technology*, "Strong-field physics driven by quantum light"	**Zubin Jacob**, *Purdue University*, "HADAR: Machine Perception Through Pitch Darkness like Broad Daylight"	**Ivan Burenkov**, *Joint Quantum Institute @ NIST*, "Super-resolution imaging via photon-number-resolving measurements"
12:40	**Javier Aizpurua**, *DIPC Basque Country*, "Molecular Optomechanics in Plasmonic Nanocavities"	**Jens Biegert**, *ICFO and ICREA*, "Attosecond science: A powerful tool to investigate many-body dynamics"	**Prasanna V. Balachandran**, *University of Virginia*, "Computational Design of Inorganic Materials with Targeted Optical and Magnetic Properties using First Principles Calculations"	**Natalia Litchinitser**, *Duke University*, "Nano-Focusing of Vortex Beams with Hyperbolic Metamaterials"

Monday Evening January 8, 2024

ver. Jan. 7, 2024

Plenary Session [Ballroom 1+2] Eugene Demler, Chair

19:00 **Naomi Halas**, *Rice University*, "Combining Surface-Enhanced Spectroscopies with Machine Learning"
19:30 **Steven Cundiff**, *University of Michigan*, "Multidimensional Coherent Spectroscopy"
20:00 **Michael Fleischhauer**, *RPTU*, "Non-equilibrium physics with Rydberg atoms: Epidemic dynamics, self-organized criticality and anomalous directed percolation"

	Frontiers in nanophotonics II Ballroom 1 Naomi Halas, Chair	*Advances in ultrafast spectroscopy of quantum systems I* Magpie A Steven Cundiff and Hebin Li, Chair	*Many-body physics of driven, dissipative spin systems with Rydberg atoms* Magpie B Michael Fleischhauer, Chair	*Quantum acoustics* Wasatch A Jack Harris, Chair
20:50	**Alessandro Alabastri**, *Rice University*, "Energy transfer mechanisms in plasmonic systems for pulsed photocatalysis"	**Hebin Li**, *Florida International University*, "Optical 2D Coherent Spectroscopy of Ultrafast Carrier Dynamics in Methylammonium Lead Iodide Perovskites"	**Thomas Pohl**, *Vienna University of Technology*, "Interacting photons and quantum states of light with atomic metasurfaces"	**Jack Harris**, *Yale University*, "Testing the linearity of quantum mechanics with superfluid resonators"
21:10	**Uriel Levy**, *Hebrew University of Jerusalem*, "Silicon rich Nitride as a material platform for CMOS compatible all Dielectric Metasurface"	**Albert Liu**, *Brookhaven National Laboratory*, "Probing Inhomogeneous Superconductivity with Terahertz Photon Echoes"	**Alexey Gorshkov**, *NIST and University of Maryland*, "Passive Error Correction"	**Mohammad Mirhousseini**, *Caltech*, "Electrostatic Transduction of Gigahertz-frequency Mechanical Motion"
21:30	**Henry Everitt**, *Army Research Laboratory*, "Thermal Imaging Through Hot Emissive Windows"	**Arnaud Mussot**, *University of Lille*, "All fiber triple frequency comb light source for multidimensional spectroscopy"	**Peter Schauss**, *University of Virginia*, "New directions in quantum gas microscopy"	**Emil Prodan**, *Yeshiva University*, "Implementing the classification table of topological insulators with acoustics"
21:50	**Tigran Shahbazyan**, *Jackson State University*, "Förster resonance energy transfer in inhomogeneous absorbing environment"	**Jared Wahlstrand**, *National Institute of Standards and Technology*, "Biexcitons in an exciton-polariton system probed through collinear optical multidimensional coherent spectroscopy"	**Bryce Gadway**, *Penn State University*, "Arrays of many-state Rydberg atoms: Correlated dynamics in a synthetic dimension"	**Laure Mercier de Lépinay**, *Aalto University*, "Quantum mechanics-free subsystem with mechanical oscillators"
22:10	**Jiming Bao**, *University of Houston*, "Measuring temperature of catalysts in photothermal reactions using blackbody radiation"	**Konstantin Dorfman**, *Hainan University*, "Ultrafast studies of nonadiabatic dynamics with high harmonic spectroscopy"	**Robert Jones**, *University of Virginia*, "A Broadband RF/Microwave Field Sensor Based on Non-Resonant, Non-Linear Field-Mixing in Rydberg Atoms"	**Konrad Lehnert**, *JILA, University of Colorado and NIST*, "Quantum information processing with micro-electromechanical devices"

Tuesday Morning January 9, 2024

ver. Jan. 7, 2024

7:00 **Continental breakfast** [Ballroom 1+2]

Plenary Session [Ballroom 1+2] Anatoly Svidzinsky, Chair

7:30 **Wolfgang Schleich**, *Ulm University*, "Landau-Zener transitions, Hawking radiation and number theory"
8:00 **Mette Gaarde**, *Louisiana State University*, "Attosecond Charge Migration"
8:30 **Jesper Mørk**, *Technical University of Denmark*, "Semiconductor nanolasers"

	Frontiers in atom optics I Ballroom 1 Wolfgang Schleich, Chair	*Attosecond charge migration* Magpie A Mette Gaarde, Chair	*Advances in semiconductor lasers* Magpie B Jesper Mørk and Gadi Eisenstein, Chair	*Quantum sensing* Wasatch A Svetlana Malinovskaya, Chair
9:10	**Wolf von Klitzing**, *FORTH-IESL*, "Fundamental Limits to quantum transport and matterwave optics"	**James Cryan**, *SLAC National Accelerator Laboratory*, "Probing Ultrafast Electron Motion with Attosecond X-ray Free Electron Lasers"	**John Bowers**, *UCSB*, "FM Mode Locking of Quantum Dot Lasers"	**Svetlana Malinovskaya**, *Stevens Institute of Technology*, "Chirped fractional stimulated Raman adiabatic passage for enhanced spectral resolution"
9:30	**Donatella Cassettari**, *University of St Andrews*, "Holographic Realization of the Prime Number Quantum Potential"	**Nikolay Golubev**, *University of Arizona*, "Characterizing electronic coherence in molecules in phase space"	**Kent Choquette**, *University of Illinois*, "Supermode Control of Anti-Guided Microcavity Laser Arrays"	**Maxim Sukharev**, *Arizona State University*, "Unveiling the dance of molecules: exploring molecular strong coupling in complex electromagnetic environments"
9:50	**Frank Narducci**, *Naval Postgraduate School*, "Equivalent Hamiltonians and a tall atomic tower"	**François Mauger**, *Louisiana State University*, 'Understanding charge migration in organic molecules using attochemistry and nonlinear dynamics"	**Johann Peter Reithmaier**, *Universität Kassel*, "III-V-Si nanocomposites: Potential Novel Material Platform for Future Si-Photonics"	**Barry Garraway**, *University of Sussex, UK*, "Topology and control of ultra-cold atoms with radio-frequency fields"
10:10	**Denys Bondar**, *Tulane University*, "Making Pb look like Au: Alchemy as a quantum control problem"	**Adrien Longa**, *INRS-EMT, Canada*, "High-energy multidimensional solitary states in hollow-core fibers"	**Gadi Eisenstein**, *Technion*, "VCSELs for chip-scale Rb atomic clocks"	**Hossein Sadeghpour**, *ITAMP - Harvard University*, 'Universality classes of a spinor BEC far from equilibrium"

10:30 — Break —

Plenary Session [Ballroom 1+2] Václav Špička, Chair

10:50 **Hui Cao**, *Yale University*, "Anderson localization of light: a 40-year pursuit"
11:20 **Susanne Yelin**, *Harvard University*, "Programmable Simulations of Molecules and Materials with Reconfigurable Quantum Processors"

	Anderson localization of light Ballroom 1 Hui Cao, Chair	*Cooperative arrays* Magpie A Susanne Yelin, Chair	*Frontiers in atom optics II* Magpie B Wolfgang Schleich, Chair	*Advances in ultrafast spectroscopy of quantum systems II* Wasatch A Hebin Li and Steven Cundiff, Chair
12:00	**Serguei Skipetrov**, *CNRS*, "Longitudinal waves prevent Anderson localization of light"	**Ana Asenjo-García**, *Columbia University*, "Universal scaling laws for correlated decay in many-body quantum systems"	**Georgi Gary Rozenman**, *Massachusetts Institute of Technology*, "Surface Gravity Waves: A Gateway to Understanding Quantum and Classical Phenomena"	**Frank Stienkemeier**, *University of Freiburg*, "Time-resolved coherent electronic spectroscopy as a tool for probing cold, weakly-interacting samples"
12:20	**Alexey Yamilov**, *Missouri S&T*, "Anderson localization of electromagnetic waves in three dimensions"	**Johannes Zeiher**, *Max Planck Institute of Quantum Optics*, "Controlling an atomically thin mirror with a single atom"	**Hansjörg Dittus**, *University of Bremen*, "Quantum Technologies and their Applications in Space"	**Jacek Kasprzak**, *Institut Néel, CNRS Grenoble, France*, "Electronically tunable exciton confinement probed with nonlinear spectroscopy"
12:40	**Antton Goïcoechea**, *IETR/CNRS*, "Anderson Localization of Electromagnetic Waves in Three-Dimensional Media"	**Valentin Walther**, *Purdue University*, "Beating Decay into a Continuum through Strong Coupling"	**Claus Lämmerzahl**, *University of Bremen*, "A gravitational metrological triangle"	**Aart Verhoef**, *Texas A&M University*, "Sub-Diffraction-Limited Multi-Color Multiphoton Imaging with a Single Laser Source and Single Photon Avalanche Detector Array"

Tuesday Evening January 9, 2024

ver. Jan. 7, 2024

Plenary Session [Ballroom 1+2] Irina Novikova, Chair

19:00 **Eugene Polzik**, *Niels Bohr Institute, Copenhagen University*, "Quantum Measurements Beyond Limits"
19:30 **Alexandra Boltasseva**, *Purdue University*, "Transdimensional Materials: From Tailorable Photonics to Wigner Crystallization"
20:00 **Peter Michler**, *University of Stuttgart*, "Quantum-Dot Quantum Light Sources for Quantum Photonic Networks"

	Quantum measurements beyond standard limits Ballroom 1 Eugene Polzik and Eugeniy Mikhailov, Chair	*Crossroads of nano, quantum, and machine learning* Magpie A Alexandra Boltasseva, Chair	*Semiconductor quantum nanophotonics* Magpie B Peter Michler, Chair	*Entanglement and nonclassicality* Wasatch A Andrei Faraon, Chair
20:50	**Mika Sillanpää**, *Aalto University*, "Ground-state cooling of a mechanical oscillator by a noisy environment"	**Gerhard Klimeck**, *Purdue University*, "Materials screening for spin orbit torque and quantum transport in 2D van der Waals heterostructures"	**Frank Jahnke**, *University of Bremen, Germany*, "Coexistence of stimulated emission and multi-mode operation in a thresholdless nanolaser"	**Andrei Faraon**, *California Institute of Technology*, "Remote optical entanglement of single rare-earth ions"
21:10	**Philipp Treutlein**, *University of Basel*, "Multiparameter quantum metrology with EPR entangled BECs"	**Simeon Bogdanov**, *University of Illinois Urbana-Champaign*, "Analysis of two-stage microwave-to-optical transduction via terahertz states"	**Lara Greten**, *Technische Universität Berlin*, "2D Semiconductor-Plasmonic Hybrids: Strong Coupling, Exciton Localization, and Single Photon Emission"	**Joaquin Rodriguez-Nieva**, *Texas A&M University*, "Entanglement patterns in many-body quantum systems constrained by spatial locality"
21:30	**Irina Novikova**, *College of William & Mary*, "Toward bi-chromatic intensity squeezing generation using Four-Wave Mixing in Rb Vapor"	**Vinod Menon**, *City College & Grad Center of CUNY*, "Strongly coupled light-matter quasiparticles: From Hamiltonian simulators to engineering quantum materials"	**Battulga Munkhbat**, *Technical University of Denmark*, "Nanoengineered Transition Metal Dichalcogenides Platform for Quantum Photonics"	**Sebastian Deffner**, *University of Maryland, Baltimore County*, "Introduction to the thermodynamics of quantum information"
21:50	**Eugeniy Mikhailov**, *College of William & Mary*, "Earth like magnetic field vector magnetometry: Rb atoms, EIT, and machine learning"	**Evgenii Narimanov**, *Purdue University*, "Ultrafast Optical Modulation by Virtual Interband Transitions"	**Akinwande Deji**, *University of Texas at Austin*, "Atomristors: Resistance Change based on Single-Atom Adsorption Dynamics in a 2D Crystal"	**Soonwon Choi**, *MIT*, "Complete Hilbert-Space Ergodicity in Quantum Dynamics"
22:10	**Alberto Marino**, *Oak Ridge National Laboratory*, "Parallel Quantum-Enhanced Sensing"	**Howard Lee**, *University of California, Irvine*, "Epsilon-Near-Zero Photonics in Planar and Optical Fiber Platform"	**Pankaj Jha**, *Syracuse University*, "Superconducting vdW Materials for Quantum Photonics"	**Vladimir Malinovsky**, *DEVCOM Army Research Laboratory*, "Spin Squeezing and Dicke State Generation via Rapid Adiabatic Passage"

Wednesday Morning January 10, 2024

ver. Jan. 7, 2024

7:00 **Continental breakfast** [Ballroom 1+2]

Plenary Session [Ballroom 1+2] Thomas Walther, Chair

7:30 **Christopher Monroe**, *Duke University*, "Atomic Quantum Systems"
8:00 **Dmitry Budker**, *Helmholtz Institute Mainz, JGU Mainz, and UC Berkeley*, "How big is your tabletop? Many ways to explore fundamental questions"
8:30 **Vladimir Shalaev**, *Purdue University*, "Extreme Nonlinear Optics: Going Stronger and Faster"

	Qubits and quantum computing system Ballroom 1 Christopher Monroe, Chair	*How big is your tabletop?* Magpie A Dmitry Budker, Chair	*Meta-Quantum* Magpie B Vladimir Shalaev, Chair	*Quantum effects I* Wasatch A Frank Narducci, Chair
9:10	**Trent Graham**, *University of Wisconsin, Madison*, "Mid-circuit readout and quantum gates in a 2D Cs array"	**Neils Madsen**, *Swansea University*, "Antihydrogen Spectroscopy and More"	**Michael Manfra**, *Purdue University*, "Anyons in Condensed Matter Systems"	**Eric P. Glasbrenner**, *Universität Ulm*, "From Large-Momentum-Transfer Atom Interferometry to the Landau-Zener problem"
9:30	**Adam Shaw**, *Caltech*, "Quantum Science with Tweezer Arrays"	**Tim Chupp**, *University of Michigan*, "EDMs—from cells to storage rings"	**Mark Brongersma**, *Stanford University*, "Light manipulation with atomically thin quantum metasurfaces"	**Reinhold Walser**, *TU Darmstadt*, "Transverse motion of diffraction wavelets in a matter-wave beam splitter"
9:50	**Allison Carter**, *NIST*, "Quantum sensing and simulations in a Penning ion trap"	**Swati Singh**, *University of Delaware*, "Characterizing the quantum properties of ultralight dark matter- an open quantum systems approach"	**Andrea Alù**, *City University of New York*, "Quantum Metamaterials and Metasurfaces"	**Thomas Walther**, *TU Darmstadt*, "A Quantum Key Distribution Network on a City Scale based on Timebin Entanglement"
10:10	**Alexander Lukin**, *QuEra*, "Quench dynamics as a shortcut to adiabaticity in Rydberg atoms arrays"	**George Winstone**, *Northwestern University*, "Detecting high frequency gravitational waves with optically levitated micro disks"	**David Miller**, *Stanford University*, "Finding and counting channels with waves"	**János Bergou**, *CUNY Hunter College*, "Broadcasting single-qubit and multi-qubit-entangled states: authentication, cryptography, and distributed quantum computation"

10:30 — Break —

Plenary Session [Ballroom 1+2] Olga Kocharovskaya, Chair

10:50 **Marlan Scully**, *Texas A&M University*, "Presentation of the 2024 Willis E. Lamb Award for Laser Science and Quantum Optics"
11:20 **Vanderlei Bagnato**, *Texas A&M University and University of São Paulo*, "Experimental investigating the relaxation dynamics of an out of equilibrium closed quantum system"

	Quantum gases Ballroom 1 Vanderlei Bagnato, Chair	*X-ray optics* Magpie A Linda Young, Chair	*Biomedical quantum sensing* Magpie B Alexander Huck, Chair	*New approaches in neural networks and crystallography* Wasatch A Peter Keefe, Chair
12:00	**Giulia Del Pace**, *University of Florence*, "Supercurrents in atomic superfluid rings"	**Linda Young**, *ANL, University of Chicago*, "All x-ray attosecond pump/attosecond probe spectroscopy of liquid water"	**Alexander Huck**, *Technical University of Denmark*, "Quantum sensing of biomagnetic fields with the negatively charged nitrogen-vacancy center in diamond"	**Lev Murokh**, *Queens College of CUNY*, "VitaCrystallography: Old Approach to New Challenges"
12:20	**Vladislav Yakovlev**, *Texas A&M University*, "When time matters"	**Justin Peatross**, *Brigham Young University*, "Nonlinear Thomson Scattering: Coherence between Electrons Ionized from the Same Atom"	**Ajith Vijayachandran Jothikumari**, *University of Texas at Austin*, "Use of laser isotope spectroscopy to study iron deficiency in children"	**Václav Špička**, *Institute of Physics of the Czech Academy of Sciences*, "Physical processes controlling biological neural networks"
12:40	**Sebastian Carrasco**, *DEVCOM Army Research Lab*, "Fast Tractor Atom Interferometry Enhanced by Optimal Quantum Control"	**Thomas Linker**, *Stanford PULSE Institute*, "Inner Shell X-ray Lasing and Filamentation"	**Lloyd Lumata**, *University of Texas at Dallas*, "Hyperpolarized Magnetic Resonance: Enhancing NMR and MRI Signals by >10,000-fold for In Vivo Biochemical Assessment in Real-Time"	**Peter Keefe**, *Keefe and Associates*, "Intellectual Property Highlights for Scientists"

Wednesday Evening January 10, 2024

ver. Jan. 7, 2024

Plenary Session [Ballroom 1+2] John Pendry, Chair

19:00 **Shaul Mukamel**, *University of California, Irvine*, "Molecular nonlinear spectroscopy with quantum light, entangled photons, and X ray pulses"
19:30 **Nader Engheta**, *University of Pennsylvania*, "Sculpting Light in Four Dimensions"
20:00 **Alexander Lvovsky**, *University of Oxford*, "Superresolution by spatial demultiplexing"

	Novel spectroscopy with quantum light and optical cavities Ballroom 1 Shaul Mukamel, Chair	*4D metamaterials* Magpie A Nader Engheta, Chair	*Quantum limitations on imaging resolution* Magpie B Alexander Lvovsky, Chair	*Quantum effects II* Wasatch A Byoung Ham, Chair
20:50	**Minhaeng Cho**, *Korea University*, "Single photon interferometry and its application to quantum spectroscopy"	**John Pendry**, *Imperial College London*, "Extreme time modulation of material properties and Hawking radiation"	**Mankei Tsang**, *National University of Singapore*, "Quantum noise spectroscopy as an incoherent imaging problem"	**Byoung Ham**, *Gwangju Institute of Science and Technology*, "Coherence manipulations of the delayed-choice quantum erasers for macroscopic nonlocal quantum correlation"
21:10	**Aaron Rury**, *Wayne State University*, "Motional Narrowing through Photonic Exchange: Rational Suppression of Excitonic Disorder from Molecular Cavity Polariton Formation"	**Iñigo Liberal**, *Public University of Navarre*, "Quantum optics with temporal metamaterials"	**Kevin Liang**, *Adelphi University*, "Effects of Partial Coherence and Off-Axis Aberrations on Fisher Information-based Superresolution"	**Eduardo Ibarra García Padilla**, *University of California Davis and San José State University*, "Quantum simulation: Higher symmetries, new architectures, and artificial intelligence"
21:30	**Vladimir Chernyak**, *Wayne State University*, "Quantum-Light Spectroscopies with Interferometry: A First Principles Quantum Electrodynamics (QED) Approach"	**Mário Silveirinha**, *University of Lisbon*, "Shaking Photons Out of Topological Material"	**Giacomo Sorelli**, *Fraunhofer IOSB, Ettlingen, Germany*, "Resolving incoherent optical sources at the quantum limit"	**Selim Shahriar**, *Northwestern University*, "Dark Matter Search Using a Superluminal Laser"
21:50	**Alexander Friedrich**, *Ulm University, Germany*, "Field Theoretical Few-mode Models for Entanglement Assisted Cavity Atom Interferometry"	**Dimitrios Sounas**, *Wayne State University*, "Analytical properties and fundamental bounds in time-modulated networks"	**Michael R. Grace**, *Raytheon BBN*, "Sub-Diffraction Imaging: Quantum Resolution Limits and Practical Receivers"	**Yidun Wan**, *Fudan University*, "Experimental realization of a topologically protected Hadamard gate via braiding Fibonacci anyons"
22:10	**Ajay Ram Srimath Kandada**, *Wake Forest University*, "Nonlinear Spectroscopy with Classical and Quantum Light to Probe Coherent Exciton Dynamics"	**Behrooz Semnani**, *Institute for Quantum Computing*, "Metasurface Structures for Control of Quantum Emitters"	**Sultan Abdul Wadood**, *Princeton University*, "Nonlinearity enabled phase superresolution"	**Sergey Polyakov**, *NIST*, "Quantum Measurement Enables Blending Quantum and Classical Networks"

Thursday Morning January 11, 2024

ver. Jan. 7, 2024

7:00 **Continental breakfast** [Ballroom 1+2]

Plenary Session [Ballroom 1+2] Joachim von Zanthier, Chair

7:30 **Carmen Menoni**, *Colorado State University*, "Re-inventing optical materials for high power and high intensity lasers for inertial fusion energy"

8:00 **Dawei Wang**, *Zhejiang University, China*, "Quantum simulation at the atom-photon interface"

8:30 **Yuri Shvyd'ko**, *Argonne National Laboratory*, "Resonant X-ray excitation of the nuclear clock isomer ^{45}Sc: past, present, and future"

	The science and technology that support inertial fusion energy Ballroom 1 Carmen Menoni, Chair	*Atom-photon interface* Magpie A Dawei Wang, Chair	*Quantum X-ray optics I* Magpie B Yuri Shvyd'ko, Chair	*Diamond photonics* Wasatch A Philip Hemmer, Chair
9:10	**Pravesh Patel**, *Focused Energy*, "Inertial Fusion Energy with High Gain Proton Fast Ignition"	**Bharath Kannan**, *Atlantic Quantum*, "Waveguide Quantum Electrodynamics with Superconducting Qubits"	**Olga Kocharovskaya**, *Texas A&M University*, "Towards on demand hard X-ray quantum memory"	**Philip Hemmer**, *Texas A&M University*, "Engineering Nanodiamonds for Quantum-enhanced Bio-sensing"
9:30	**Siegfried Glenzer**, *SLAC National Accelerator Laboratory*, "Exploring matter found inside planets, stars, and laser fusion implosions"	**Tongcang Li**, *Purdue University*, "Spin quantum emitters in 2D and 1D materials"	**Wen-Te Liao**, *National Central University*, "Gravitationally sensitive structured x-ray optics using nuclear resonances"	**Shuo Sun**, *JILA and University of Colorado Boulder*, "Hybrid photonic integration of color centers in designer nanodiamonds with SiN nanophotonic devices"
9:50	**Mike Campbell**, *MCM Consultants*, "Perspectives on Inertial fusion energy-Opportunities and Challenges"	**Aishwarya Kumar**, *Stanford University*, "Interfacing Rydberg atoms with superconducting resonators"	**Sharon Shwartz**, *Bar Ilan University*, "Demonstration of SU(1,1) interferometer with x-rays"	**Peter Pauzauskie**, *University of Washington*, "Progress towards the molecular synthesis of group-IV quantum electronic point defects in diamond"
10:10	**Arianna Gleason**, *SLAC National Accelerator Laboratory*, "High-fidelity characterization of nanofoams for inertial fusion energy targets"	**Han Cai**, *Zhejiang University, China*, "Quantum Simulation with Superradiance Lattices"	**Phay Ho**, *Argonne National Laboratory*, "Strategies For Enhanced Efficiency of Ultrafast X-ray Scattering"	**Peter Burke**, *University of California Irvine*, "Super-Resolution Imaging of Voltages in the Interior of Individual, Vital Mitochondria"

10:30 — Break —

Plenary Session [Ballroom 1+2] Jörg Evers, Chair

10:50 **Ralf Röhlsberger**, *Helmholtz Institute Jena and DESY Hamburg*, "Is there a maximum acceleration in the universe?"

11:20 **Aleksei M. Zheltikov**, *Texas A&M University*, "Self-focusing and beam instabilities in broadband stochastic laser fields: not if, but when"

	Quantum X-ray optics II Ballroom 1 Ralf Röhlsberger, Chair	*Strong field physics* Magpie A Aleksei M. Zheltikov, Chair	*Quantum light-matter interactions* Magpie B Markus Raschke, Chair	*Time crystals* Wasatch A Hossein Taheri, Chair
12:00	**Jörg Evers**, *MPI for Nuclear Physics, Heidelberg, Germany*, "Mössbauer science with ^{57}Fe at X-ray free-electron lasers: theory and experiment"	**Arthur Dogariu**, *Texas A&M University and Princeton University*, "Coherent Amplification for Directional Electric Field Measurements using E-FISH"	**Vivishek Sudhir**, *MIT*, "Light-motion interaction across 30 orders in mass: gravitational-wave detectors to molecules and back"	**Alex Greilich**, *TU Dortmund University*, "Universal time crystal in electron-nuclear spin system"
12:20	**Dominik Lentrodt**, *University of Freiburg*, "Towards nonlinear effects with Mössbauer nuclei and x-ray cavities"	**Zhenhuan Yi**, *Texas A&M University*, "Multiphoton Processes in Quantum Beat Spectroscopy"	**Alexey Belyanin**, *Texas A&M University*, "Quantum gates based on ensembles of quantum emitters strongly coupled to solid-state nanocavities"	**Hossein Taheri**, *University of California, Riverside*, "Dissipative discrete time crystals in optical Kerr cavities"
12:40	**Joachim von Zanthier**, *University Erlangen-Nürnberg*, "Extending Hanbury Brown Twiss Measurement to Higher Orders for X-Ray Structure Analysis"	**Pavel Polynkin**, *University of Arizona*, "Ultrafast Laser Technology for Strong-Field Science in the Long-Wave Infrared"	**Eric Bowes**, *Los Alamos National Laboratory*, "Intrinsic and extrinsic control of quantum optical properties in colloidal quantum dots"	**Bumki Min**, *KAIST*, "Light-matter interactions in photonic temporal crystals"

17:30 **Poster Session and Buffet Dinner — Ballrooms 2 & 3**

Thursday Evening January 11, 2024

Plenary Session [Ballroom 1+2] J. Gary Eden, Chair

19:00 **Jorge Rocca**, *Colorado State University*, "Ultra-intense laser interactions with nanostructures: creating extreme plasma conditions and high energy particles with ultrafast lasers"
19:30 **Marianna Safronova**, *University of Delaware*, "Quantum Sensors in Space for New Physics Discoveries"
20:00 **Dana Z. Anderson**, *Infleqtion and JILA, University of Colorado Boulder*, "Properties of and sensing with Maxwell Matter Waves"

	Lasers and laser-matter interactions for fusion energy Ballroom 1 Jorge Rocca, Chair	*Quantum sensors in space for new physics discoveries* Magpie A Marianna Safronova, Chair	*Information processing and sensing with ultracold atoms* Magpie B Dana Z. Anderson, Chair	*Laser spectroscopy* Wasatch A Aart Verhoef, Chair
20:50	**J. Gary Eden**, *University of Illinois*, "Stimulated Brillouin Scattering at 266 nm in the Rare Gases and N_2"	**Robert Thompson**, *Jet Propulsion Lab*, "TBA"	**Shengwang Du**, *University of Texas at Dallas*, "Distributed Quantum Computing with Shared Quantum Gate Processing Unit"	**Dmitry Kurouski**, *Texas A&M University*, "Plasmon-Driven Chemistry on Mono and Bimetallic Nanostructures"
21:10	**Erhard Gaul**, *University of Texas at Austin*, "TBA"	**Naceur Gaaloul**, *Leibniz University of Hanover*, "Quantum Sensing in Space for Fundamental Physics"	**Alexander Aeppli**, *JILA*, "Stability and Accuracy in a Strontium Optical Lattice Clock"	**Dmitri Voronine**, *University of South Florida*, "Quantum plasmonic imaging of edge plasmons in $MnPS_3$"
21:30	**Gennady Shvets**, *Cornell University*, "Laser-ion acceleration and its applications to inertial fusion: from fast ignition to heavy-ion drivers"	**Laura Sinclair**, *National Institute of Standards and Technology*, "Quantum-limited time transfer for future intercontinental clock comparisons and space-based coherent networks"	**Zhifan Zhou**, *University of Maryland*, "Enhanced metrology with the geometric phase jump in a clock interferometer"	**Narangerel Altangerel**, *Texas A&M University*, "Thermostable Raman Interaction Profiling (TRIP)"
21:50	**Conner Galloway**, *Xcimer Energy Corporation*, "TBA"	**Timothy Kovachy**, *Northwestern University*, "Thousandfold Phase Amplification in a Robust Resonant Atom Interferometer via Applying Quantum Control to Multipath Interference"	**Yusef Maleki**, *Texas A&M University*, "Quantum Networked Sensors Metrology: Insights from Fisher Information"	**Alma Fernández**, *Texas A&M University*, "*In vivo* mapping of nitrate distribution in wild-type *Arabidopsis thaliana* roots with Raman microscopy"
22:10	**Sophia Malko**, *Princeton Plasma Physics Lab*, "Proton transport and stopping power in warm dense matter"	**David Leibrandt**, *University of California, Los Angeles*, "Prospects for trapped-ion optical clocks in space"	**Tai Hyun Yoon**, *Korea University*, "Nonclassicality of Two-mode Stabilized Squeezed Coherent States"	**Yiyun Li**, *Texas A&M University*, "Optical multiband polarimetric modulation sensing for gender and species identification of flying native solitary pollinators"

Friday Morning January 12, 2024

ver. Jan. 7, 2024

7:00 **Continental breakfast** [Ballroom 1+2]

Plenary Session [Ballroom 1+2] John Howell, Chair

7:30 **Shanhui Fan**, *Stanford University*, "Topology and Computing in Synthetic Frequency Dimension"

8:00 **Luiz Davidovich**, *Texas A&M University*, "Quantum sensors: surpassing the classical limits of precision"

8:30 **Franco Nori**, *RIKEN and University of Michigan*, "Machine Learning Techniques Applied to Quantum Physics"

	Topological quantum optics Ballroom 1 Shanhui Fan, Chair	*Quantum metrology* Magpie A Luiz Davidovich, Chair	*Recent developments in quantum optics* Magpie B Franco Nori, Chair	*Bright squeezed vacuum: strong-field optics meets quantum optics* Wasatch A Maria Chekhova, Chair
9:10	**Mikael Rechtsman**, *Pennsylvania State University*, "Photonic Crystal Pseudo-magnetism"	**Jiaxuan Wang**, *Texas A&M University*, "Investigating Quantum-Enhanced Parameter Estimation in Lossy Photonic Channels Using Bright squeezed light"	**Alireza Marandi**, *California Institute of Technology*, "Ultrafast Nonlinear Nanophotonics: From Superior Components to Advanced Circuits"	**Maria Chekhova**, *Max Planck Institute for the Science of Light*, "Strong-field optics meets quantum optics"
9:30	**Mahmoud Jalali Mehrabad**, *Joint Quantum Institute, University of Maryland*, "Non-Hermitian photonics in synthetic dimensions"	**Luis Sánchez-Soto**, *Max Planck Institute for the Science of Light*, "Achieving the ultimate timing resolution"	**Ryan Hamerly**, *MIT / NTT Research*, "Wavelength-Multiplexed Photonic Deep Learning at the Internet's Edge"	**Felix López Hoffmann**, *Friedrich-Alexander-Universität Erlangen-Nürnberg*, "Bright squeezed vacuum driving electron emission from needle tips"
9:50	**Gil Refael**, *Caltech*, "Topological energy pumping in doubly driven Weyl semimetal"	**Andrew Jordan**, *Chapman University*, "Theory of Super Range Resolution with Super Radar"	**Midya Parto**, *CREOL, University of Central Florida*, "Photonic resonator networks: from non-Hermitian and topological physics to machine learning and AI"	**Ido Kaminer**, *Technion*, "Free-Electron Quantum Optics"
10:10	**Chris Flower**, *Joint Quantum Institute, NIST and Univ. of Maryland*, "Observation of topological frequency combs"	**John Howell**, *Chapman University*, "Super Radar"	**Federico Presutti**, *Cornell University*, "Programmable multimode squeezed light at visible wavelengths"	**Artem Rudenko**, *Kansas State University*, "Disentangling Interweaved Molecular Dynamics with XFEL-induced Coulomb Explosion"

10:30 — Break —

Plenary Session [Ballroom 1+2] Philip Hemmer, Chair

10:50 **Olga Smirnova**, *Max Born Institute*, "Ultrafast molecular chirality: a topological connection"

11:20 **Ren-Bao Liu**, *Chinese University of Hong Kong*, "Quantum nonlinear spectroscopy and applications"

	Ultrafast spectroscopy Ballroom 1 Olga Smirnova, Chair	*Diamond based quantum sensing* Magpie A Ren-Bao Liu, Chair	*Nanoscale thermal and quantum transport* Magpie B Alexey Belyanin, Chair	*Time-domain quantum optics and noise spectroscopy* Wasatch A Denis Seletskiy, Chair
12:00	**Christian Ott**, *Max-Planck-Institut für Kernphysik, Heidelberg, Germany*, "Attosecond electronic quantum dynamics viewed by resonant transitions"	**Chunhui Du**, *Georgia Institute of Technology*, "Quantum Sensing of Two-Dimensional Magnetism"	**Longji Cui**, *University of Colorado, Boulder*, "Near field thermal nanoscopy for nonequilibrium hot electron and phonon transport"	**Daniele Fausti**, *University of Erlangen (FAU)*, "Measuring and controlling fluctuations in quantum materials"
12:20	**Margarita Khokhlova**, *King's College London*, "Boosting XUV intensity with propagation: from high-harmonic generation to high-order frequency mixing"	**Songtao Chen**, *Rice University*, "Telecom Quantum Network Nodes Based on Single T Centers in Silicon"	**Markus Raschke**, *University of Colorado, Boulder*, "Quantum vibrational coupling as molecular ruler for nano-imaging from structural disorder to energy dissipation"	**Denis Seletskiy**, *Polytechnique Montréal*, "Experimental quantum electrodynamics"
12:40	**Emilio Pisanty**, *King's College London*, "Optical tunnelling without a barrier?"	**Tim Hugo Taminiau**, *QuTech and Delft University of Technology*, "Sensing and controlling interacting spin systems in diamond"	**Kun Wang**, *University of Miami*, "Highly efficient long-range quantum transport in open-shell donor-acceptor molecular wires"	**Mack Kira**, *University of Michigan*, "Valleytronic Frequency Combs of Quantum Lightwaves"

Friday Evening January 12, 2024

ver. Jan. 7, 2024

Plenary Session [Ballroom 1+2] Peter Keefe, Chair

19:00 **Matthias Kling**, *PULSE Institute, Stanford University*, "A perspective on lightwave electronics"
19:30 **Hartmut Abele**, *TU Wien*, "Caustics in free fall, the weak force and neutron interferometry"
20:00 **Alexei V. Sokolov**, *Texas A&M University*, "Molecular Coherence and Quantum Sensing"

	Lightwave electronics Ballroom 1 Matthias Kling, Chair	*Neutron interferometry* Magpie A Hartmut Abele, Chair	*Molecular modulation* Magpie B Alexei V. Sokolov, Chair	*New trends in quantum optics* Wasatch A Michael Tobar, Chair
20:50	**Mohammed Hassan**, *University of Arizona*, "Attosecond Optical Switching"	**Albert Young**, *North Carolina State University/Triangle Universities Nuclear Laboratory*, "High Precision Measurements of Full (MeV scale) Beta Decay Spectra using Cyclotron Resonance Emission Spectroscopy"	**Deniz Yavuz**, *University of Wisconsin*, "Molecular modulation in crystal disks"	**Michael Tobar**, *University of Western Australia*, "Twisted Cavity Resonators of Anyon Rotational Symmetry with Bulk Modes of Non-Zero Helicity"
21:10	**P. Donald Keathley**, *MIT Research Laboratory of Electronics*, "Nanoscale Lightwave Electronics: Tiny Structures Working Together Ultra Fast"	**Dmitry Pushin**, *University of Waterloo*, "Neutron Interferometry and structured waves of matter and light"	**David Novoa**, *University of the Basque Country, Spain*, "Scaling of fiber-based molecular modulation"	**Adi Pick**, *The Hebrew University of Jerusalem*, "Adiabatic protocols in Lindbladian systems"
21:30	**Christian Heide**, *Stanford University*, "Steering electrons with lightwaves: from petahertz electronics to lightwave spectroscopy"	**Bastian Märkisch**, *Technical University of Munich*, "Testing the standard model on the TeV scale in neutron decay"	**Hanieh Fattahi**, *Max Planck Institute for the Science of Light*, "Near-Petahertz Femtosecond Fieldoscopy: A Leap in Liquid Phase Spectroscopy"	**Barnabas Kim**, *Texas A&M University*, "Quantum Coherence in Thermal Systems"
21:50	**Mack Kira**, *University of Michigan*, "Lightwave electronics in semiconductors"	**Skyler Degenkolb**, *Universität Heidelberg*, "Quantum sensing with neutrons and superconductors"	**Jizhou Wang**, *Texas A&M University*, "Single-shot Infrared Imaging with Subcellular Spatial Resolution enabled by Infrared-Resonant Third-Order Sum-Frequency Technique"	**Jiru Liu**, *Texas A&M University*, "Classical-Nonclassical Polarity of Gaussian States"
22:10	**Shawn Sederberg**, *Simon Fraser University*, "Transferring structure from light to currents in solids"	**Jürgen Klepp**, *University of Vienna, Austria*, "VCN interferometry: (Near) future perspectives"	**Mikkel Brydegaard**, *Lund University*, "Seeing small things far away – remote microscopy, nanoscopy and picoscopy"	**Shi-Yuan Ma**, *Cornell University*, "Quantum-noise-limited optical neural networks using a few quanta per neuron activation"

List of Posters

ver. Jan. 7, 2024

Adel Mohamed Ali *Texas A&M University*
"Topology and nonlocality of toroidal flux qubits"

Paul Anderson *University of Waterloo*
"Optimizing loading of atoms into a hollow-core fiber using machine learning"

Ming-Hsun Chou *Texas A&M University*
"Unveiling Molecular Mysteries: Integrating AFM-TERS for Enhanced Raman Spectroscopy and Surface Analysis"

Sahar Delfan *Texas A&M University*
"Unlocking the Potential of Waveguide Biosensors for Enhanced Sensitivity"

Jinfeng Deng *Zhejiang University, China*
"Observing the quantum topology of light"

Weiru Fan *Zhejiang University, China*
"Deep learning assisted optical imaging and sensing passing through complex media"

Dmytro Filin *University of Delaware*
"Development of optical atomic clocks based on neutral titanium atoms"

Tuo Jia *Texas A&M University*
"An Introduction to Trace Anomalies"

Zhenfei Jiang *Texas A&M University*
"Quantum Information Recovery"

Mrunal Kamble *Texas A&M University*
"Surface Plasmon Resonance Sensing with Two-Mode Bright Squeezed Light"

Rohil Kayastha *Baylor University*
"Characterization of optical vortex beam in free space and optical fiber"

Christian Pluchar *University of Arizona*
"Imaging-based quantum optomechanics"

Gewei Qian *Zhejiang University, China*
"Quantum Induced Coherence Light Detection and Ranging"

Andrei Rasputnyi *Max-Planck-Institute for the Science of Light*
"High Harmonics Generation in Strong Field of Bright Squeezed Vacuum"

Germain Tobar *Stockholm University*
"Detecting single gravitons with quantum sensing"

Charles Wallace *Texas A&M University*
"Suppression of Wigner Weisskopf Decay by the Acceleration of Entangled Atoms"

Kai Wang *Sun Yet-sen University, China*
"Time Resolved Spectroscopy of Yoked Super-Fluorescence"

Fan Yang and **Wenzhuo Zhang** *Texas A&M University*
"Dynamics of Unruh effect and manifestation of Minkowski vacuum entanglement"

Danying Yu *Shanghai Jiao Tong University*
"One-Dimensional Moiré Lattice in Synthetic Frequency Dimension"

Jiale Yuan *Zhejiang University, China*
"Quantum simulation in Fock-state lattices"

Yining Zeng *National Renewable Energy Laboratory*
"Integrating Picosecond Squeezed Light with Stimulated Raman Scattering for Improved Biological Imaging" and
"Probing Product Redistribution during Photosynthesis Dark Conditions using Quantum Imaging with Undetected Photons"

Xiwen Zhang *Texas A&M University*
"Facile control of hard X-ray quantum memory"

Chaofan Zhou *Texas A&M University*
"Dynamic Control of Single-Photon Decay in Atomic Mirror Cavities"

Zhifan Zhou *University of Maryland*
"Multimode, continuous-variable twin beams for quantum sensing and information processing applications"

Shiyao Zhu *Zhejiang University, China*
"Synthesizing many-body interactions in superconducting circuits"