

Monday Morning, January 4 2010

Plenary Session, George R. Welch, Chair

7:25 **George R. Welch**, *Texas A&M University*, “Welcoming Remarks”

7:30 **Colin McKinstrie**, *Bell Laboratories, Alcatel-Lucent*, “Recent advances in fiber-based devices”

8:00 **Andy Kung**, *Academia Sinica, Taiwan*, “Waveform Synthesis using Frequency Combs Generated by Molecular Modulation”

8:30 **Ralf Röhlsberger**, *Deutsches Elektronen Synchrotron DESY*, “The collective Lamb shift in Nuclear Resonant Scattering”

Recent advances in fiber-based devices
Colin McKinstrie, Chair

Attosecond Pulses and Arbitrary Waveforms via Molecular Modulation
Alexei Sokolov, Chair

Nuclear Gamma-ray Superradiance
Ralf Röhlsberger, Chair

9:10 **Stojan Radic**, *University of California San Diego*, “Distributed Mixer Engineering with Molecular-Scale Accuracy”

Deniz D. Yavuz, *University of Wisconsin at Madison*, “Continuous-Wave Raman Generation in Molecules”

Adriana Palfy, *Max Planck Institute, Heidelberg*, “X-ray single-photon entanglement via coherent control of nuclei”

9:30 **Takayuki Kurosu**, *National Institute of Advanced Industrial Science and Technology*, “Parametric Delay Dispersion Tuner”

Fetah Benabid, *University of Bath*, “Towards a CW photonic intensity waveform synthesizer”

Jörg Evers, *Max Planck Institute for Nuclear Physics*, “Yoctosecond photon pulses from quark-gluon plasmas”

9:50 **Andreas O. J. Wiberg**, *University of California San Diego*, “Polychromatic Parametric Processing of Ultrafast Fields”

Masayuki Katsuragawa, *University of Electro-Communications, Japan*, “Efficient generation of Raman-type optical frequency comb in an enhancement cavity”

Bernhard Adams, *Argonne National Laboratory*, “Manipulation of nuclear γ -ray superradiance”

— Break —

Plenary Session, Godfrey Gumbs, Chair

10:30 **Jun Ye**, *JILA/NIST, and University of Colorado*, “Polar molecules - dipolar collisions and ultracold chemistry”

11:00 **Martin Wegener**, *Karlsruhe Institute of Technology*, “Towards 3D photonic metamaterials”

Recent advances in fiber-based devices
Andreas O. J. Wiberg, Chair

Attosecond Pulses and Arbitrary Waveforms via Molecular Modulation
Andy Kung, Chair

Cold Molecules
Lincoln Carr, Chair

Metamaterials
Martin Wegener, Chair

11:40 **Michael Vasilyev**, *University of Texas at Arlington*, “Multichannel all-optical regeneration”

MiaoChan Zhi, *Texas A&M University*, “Broadband light generation in CVD single crystal diamond”

Samuel Meek, *Max Planck Berlin*, “Taming molecular beams; towards a molecular laboratory on a chip”

(Change:)
TBA [Title Not Entered]

12:00 **Nathan Newbury**, *NIST*, “Fiber-based frequency combs and some precision measurement applications”

Chao-Kuei Lee, *NSYSU*, “Measurement of Octave-spanning Raman Generated Ultrafast Pulses”

Johann Georg Danzl, *University of Innsbruck*, “An ultracold, high-density sample of rovibronic ground-state molecules in an optical lattice”

Costas Soukoulis, *Ames Laboratory*, [Title Not Entered]

12:20 **Brian J. Smith**, *University of Oxford*, “Photon-pair generation in birefringent fibers”

Novel Optics
Vaclav Spicka, *Academy of Sciences of the Czech Republic*, “Fast dynamics of mesoscopic systems”

William C. Stwalley, *University of Connecticut*, “The electronic spectroscopy of ultracold KRb molecules”

Herbert O. Moser, *National University of Singapore*, “THz meta-foil – a platform for practical applications of metamaterials”

12:40 **Jingyun Fan**, *University of Maryland and NIST*, “High-brightness and -fidelity photon sources”

Matthias Weidemüller, *University of Heidelberg*, “Ultracold Polar Molecules in the Rovibrational Ground State”

Nick Fang, *University of Illinois at Urbana-Champaign*, “Molding the Flow of Light and Sound With Metamaterials”

Monday Evening, January 4 2010

Plenary Session, Vladislav V. Yakovlev, Chair

19:00 **Nat Fisch**, *Princeton University*, “Compressing Waves in Plasma”

19:30 **Richard Mathies**, *University of California Berkeley*, “Femtosecond Time-Resolved Stimulated Raman Spectroscopy”

20:00 **Nikolay Zheludev**, *University of Southampton*, “Nonlinear and Switchable Metamaterials”

— Break —

Wave compression in various media
Nat Fisch, Chair

*Stimulated Raman Scattering in Physics,
Chemistry, and Biology*
Richard Mathies, Chair

Cold Molecules
Jun Ye, Chair

Metamaterials 2 – Nonlinear Metamaterials
Nikolay Zheludev, Chair

20:50 **Robert Kirkwood**, *Lawrence Livermore National Laboratory*, “Using non-linear Raman amplification in a plasma to increase laser power and improve coupling to fusion targets at large laser facilities”

Satoshi Takeuchi, *RIKEN*, “Capturing structural snapshots of reacting molecules by femtosecond time-domain Raman spectroscopy”

Lincoln D. Carr, *Colorado School of Mines*, “Tunable Molecular Quantum Many Body Dynamics”

Nader Engheta, *University of Pennsylvania*, “Nonlinear Nanostructures in Metatronics”

21:10 **Nikolai Yampolsky**, *Los Alamos National Laboratory*, “Demonstration of detuning and wavebreaking effects on laser amplification by means of backward Raman scattering in plasma”

Valery Milner, *University of British Columbia*, “Narrow-band correlation spectroscopy with broad-band laser pulses”

Robin Cote, *University of Connecticut*, “Coherent manipulation of ultracold polar molecules”

Steven M. Anlage, *University of Maryland*, “Smaller, Faster, Colder: Superconducting Metamaterials”

21:30 **Ilya Dodin**, *Princeton University*, “Compressing linear waves trapped in plasma”

Vladislav V. Yakovlev, *University of Wisconsin - Milwaukee*, “Biomedical applications of stimulated Raman scattering”

Roman Krems, *University of British Columbia*, “Collision dynamics of molecules and rotational excitons in an ultracold gas confined by an optical lattice”

Willie Padilla, *Boston College*, “Infrared Metamaterials for Controlling Blackbody Emission”

21:50 **Tenio Popmintchev**, *JILA, University of Colorado at Boulder*, “Laser Pulse Self-Compression and Phase Matching of High Harmonic Generation at 0.5 keV”

George R. Welch, *Texas A&M University*, “Heterodyne Coherent anti-Stokes Raman scattering for spectral phase retrieval and signal amplification”

Paul Julienne, *NIST Joint Quantum Institute*, “Universal reaction rates for ultracold molecular collisions”

Steve Brueck, *University of New Mexico*, “Large-Area Linear and Nonlinear Nanophotonics”

Tuesday Morning, January 5 2010

Plenary Session, Claire Bedrock, Chair

7:30 **Naomi Halas**, *Rice University*, “Optically responsive complexes for nanomedicine”

8:00 **Shaul Mukamel**, *University of California, Irvine*, “Stimulated CARS Resonances Revisited: Double-slit Interference of Two-photon Pathways”

8:30 **Leonid Butov**, *University of California San Diego*, “Exciton Condensates”

Frontiers of plasmonics
Peter Nordlander, Chair

Nonlinear Spectroscopy with Shaped Pulses and Entangled Photons
Shaul Mukamel, Chair

Exciton Condensates
Leonid Butov, Chair

Localization of Light
Robin Kaiser, Chair

9:10 **Harry Atwater**, *California Institute of Technology*, “Plasmonics at the dielectric/metal transition and plasmonic networks”

Valentyn Prokhorenko, *University of Toronto, Canada*, “Coherent Multidimensional Spectroscopies with Coherent Control Capabilities”

Michael Lilly, *Sandia National Laboratories*, “Electrical transport techniques to probe the ground state of closely spaced electron-hole bilayers”

Mark D. Havey, *Old Dominion University*, “Light scattering in high density and ultracold Rb”

9:30 **Jonathan Fan**, *Harvard University*, “Fano Interference in Self-Assembled Plasmonic Nanoparticle Clusters”

Ted Goodson, *University of Michigan*, “Entangle Photon Spectroscopy of Organic Molecules”

Alexey Kavokin, *University of Rome II*, “Superconductivity mediated by a Bose-Einstein condensate of exciton-polaritons”

Igor M. Sokolov, *State Polytechnic University, St. Petersburg*, “Light scattering from high density ultracold atomic clouds”

9:50 **Mikael Käll**, *Chalmers University of Technology*, “Alignment, Rotation and Spinning of Plasmonic Nanoparticles using Polarization Dependent Optical Forces”

Scott Papp, *California Institute of Technology*, “Characterizing multipartite entanglement with uncertainty relations”

Barbara Pietka, *Ecole Polytechnique Fédérale de Lausanne, Switzerland*, “Condensation of exciton-polaritons in a semiconductor microcavity”

Sergey Skipetrov, *CNRS and Joseph Fourier University*, “Self-consistent theory of Anderson localization”

10:10 **Stefan Maier**, *Imperial College London*, “Concepts for spectral and spatial mode tailoring of optical plasmonic nanocavities and THz plasmonic metamaterials”

Marcos Dantus, *Michigan State University*, “Strategies for coherent spectroscopy based on a single broad bandwidth shaped pulse”

Vittorio Pellegrini, *NEST CNR-INFM and Scuola Normale Superiore Pisa (Italy)*, “Seeing inter-layer excitonic coherence in the excitations of electron double layers”

Andrey Chabanov, *University of Texas at San Antonio*, “Statistics of Fluctuations and Correlation of Localized Waves”

— Break —

Plenary Session, G. G. Padmabandu, Chair

10:50 **Tamar Seideman**, *Northwestern University*, “Spinning Tops in External Fields. From High Harmonic Generation to Control of Transport in the Nanoscale”

11:20 **Wolfgang Schleich**, *Universität Ulm, Free-Electron Lasers* [Title Not Entered]

Frontiers of plasmonics
Naomi Halas, Chair

New Directions in Coherent Alignment
Tamar Seideman, Chair

Free-Electron Lasers
Wolfgang Schleich, Chair

Novel Optics

Anatoly Svidzinsky, Chair

12:00 **Peter Nordlander**, *Rice University*, “Quantum description of plasmons in strongly coupled metallic nanostructures”

Yehiam Prior, *Weizmann Institute of Science*, “Molecular Alignment – Small And Large, Slow And Fast”

Roland Sauerbrey, *Research Centre Dresden-Rossendorf (FZD)*, “High Intensity Lasers as Undulators for FEL’s”

Martin Richardson, *CREOL, The College of Optics & Photonics*, “A new kid on the block - the thulium fiber laser”

12:20 **Lukas Novotny**, *University of Rochester*, “Free-Space Excitation of Propagating Surface Plasmon Polaritons”

(Change:)
Edward Hamilton, *Grand Valley State University*, “Control of the alignment dynamics of asymmetric top molecules by means of laser pulses”

Paul Preiss, *Universität Ulm*, “On the Quantum Theory of the FEL”

M. Howard Lee, *University of Georgia*, “Superstable 3-cycle in the logistic map and Sharkovskii’s theorem”

12:40 **Mark I. Stockman**, *Georgia State University*, “New Horizons of Nanoplasmonics: from SPASER to Attoseconds”

(Change:)
See Leang Chin, *Laval University*, “Femtosecond laser filamentation and molecular rotation”

Theo Nieuwenhuizen, *University of Amsterdam*, “Black holes with hair as a normal state of matter”

Tuesday Evening, January 5 2010

Plenary Session, Eric Akkermans, Chair

19:00 **Paolo Nussenzveig**, *Instituto de Fisica – USP, Brazil*, “Three-color entanglement: generation characteristics and robustness”

19:30 **Ron Folman**, *Ben-Gurion University*, “Atom chips: one decade of ultra cold atoms microns from a surface”

20:00 **Ralf Schützhold**, *Universität Duisburg-Essen*, “Fundamental effects from a quantum optics perspective”

— Break —

Plasmonics 2
Natalia Litchinitser, Chair

Quantum Information with Continuous Variables

Spatial interferometry on atom chips
Ron Folman, Chair

Unruh Effect
Eric Akkermans, Chair

20:50 **Alexandra Boltasseva**, *TU Denmark / Purdue University*, “Searching for Better Plasmonic Materials”

Paolo Nussenzveig, Chair
Ulrik Andersen, *Technical University of Denmark*, “Quantum coherence of continuous variable systems can survive complete loss”

Romain Long, *Laboratoire Kastler Brossel*, “Transition from atom number bunching to antibunching in a double-well potential on an atom chip”

Serge Reynaud, *Ecole normale supérieure Paris*, “Dynamical Casimir radiation and analogues”

21:10 **Norbert Kroó**, *Hungarian Academy of Sciences*, “Multiplasmon processes in enhanced laser fields”

Alexander Gaeta, *Cornell University*, [Title Not Entered]

Peter Krüger, *University of Nottingham*, “A radio-frequency based integrated atom interferometer and the 1d Bose gas”

(Change:)
Eric Akkermans, *The Technion, Israel*, “Casimir effect and other QED vacuum properties from the viewpoint of Shannon information”

21:30 **Mikhail A. Noginov**, *Norfolk State University*, “Loss Reduction and Stimulated Emission in Nanoplasmonic Systems”

Peter van Loock, *Max Planck Institute for the Science of Light*, “A note on quantum error correction with continuous variables”

Max Riedel, *LMU and MPQ Munich*, “Atom chip based generation of entanglement for quantum metrology”

Gerald Dunne, *University of Connecticut*, “The Schwinger Effect: Nonperturbative Pair Production from Vacuum”

21:50 **Gennady Shvets**, *University of Texas at Austin*, “Slow light in plasmonic metamaterials: the double-Fano resonance approach”

Stephen P. Walborn, *Universidade Federal do Rio de Janeiro*, “Non-Gaussian Entanglement with Spatial Variables of Photons”

(Change:)
TBA [Title Not Entered]

Miles P. Blencowe, *Dartmouth College*, “Analogue Hawking Radiation in a Superconducting Circuit”

Wednesday Morning, January 6 2010

Plenary Session, Ian Osborne, Chair

7:30 **John Pendry**, *Imperial College London*, “Transformation Optics & the Control of Electromagnetic Radiation”

8:00 **Vladimir M. Shalaev**, *Purdue University*, “Transforming Light with Metamaterials”

8:30 **Aleksei Zheltikov**, *Moscow State University*, “Ultrafast guided-wave photonics: Colorful ways to tailor ultrashort optical field waveforms”

	<i>Metamaterials 3 – Transformation Optics</i> John Pendry, Chair	<i>High Frequency and High Energy Lasers</i> Marlan O. Scully, Chair	<i>Semiconductor Lasers 2</i> Weng Chow, Chair	<i>Coherent Spectroscopy and Quantum Control</i> Valery Milner, Chair
<u>9:10</u>	Xiang Zhang , <i>University of California Berkeley</i> , “Optical cloaking and Plasmon lasers”	Jorge J. Rocca , <i>Colorado State University</i> , “Table-top soft x-ray lasers with shorter wavelengths and smaller size”	Claire Gmachl , <i>Princeton University</i> , “Highly power-efficient Quantum Cascade lasers”	Anita Goel , <i>Nanobiosym</i> , “Quantum Frontiers of Nano-Bio-Physics”
<u>9:30</u>	Che-ting Chan , <i>Hong Kong University of Science & Technology</i> , “Illusion effects created using transformation optics”	Carmen Menoni , <i>Colorado State University</i> , “Nanoscale imaging and patterning using bright beams of soft x-ray light from table-top lasers”	Cun-Zheng Ning , <i>Arizona State University</i> , “More Gain with More Loss: Metals as Gain Enhancers and Plasmonic Nanolasers”	Alexei Sokolov , <i>Texas A&M University</i> , “Backward mirror-less lasing achieved through pump pulse shaping”
<u>9:50</u>	Michal Lipson , <i>Cornell University</i> , “Transformational optics in the optical regime using nanophotonic structures”	Eyob A. Sete , <i>Texas A&M University</i> , “Transient XUV lasing without inversion via He triplet states”	Vassilios Kovanis , <i>Air Force Research Laboratory</i> , “Nonlinear dynamics of photonic circuits: gain lever, optical injection and coupled lasers”	Kazuhiko Misawa , <i>Tokyo University of Agriculture and Technology</i> , “Sensitive detection of inhalational anesthetic molecules by heterodyne-detected single-beam CARS using adaptively phase-modulated femtosecond pulses”
<u>10:10</u>	David Smith , <i>Duke University</i> , “Controlling light with transformation optical metamaterials”	Szymon Suckewer , <i>Princeton University</i> , “Coherently Driven Transitions in He atoms and He-Like Ions for XUV and X-Ray Lasing: Approach to Experiments”	Mike Wanke , <i>Sandia National Laboratory</i> , “THz transceivers”	Svetlana Malinovskaya , <i>Stevens Institute of Technology</i> , “Adiabatic Raman Passage Using an Optical Frequency Comb”

— Break —

Plenary Session, Marlan O. Scully, Chair

10:50 **Lamb Award**, “The presentation of the 2010 Willis E. Lamb Award for Laser Science and Quantum Optics”

11:20 **Mark A. Kasevich**, *Stanford University*, “Quantum Simulation with Bose-Einstein Condensed Atoms and High Finesse Optical Cavities”

	<i>Metamaterials 4 – New Concepts in Metamaterials</i> Vladimir M. Shalaev, Chair	<i>Quantum Information, Computing, and Imaging</i> Elisabeth Giacobino, Chair	<i>Bose-Einstein condensates</i> Mark A. Kasevich, Chair	<i>Novel Optics</i> Hui Xia, Chair
<u>12:00</u>	Eugeni Narimanov , <i>Purdue University</i> , “Infinite at Any Frequency: the photonic density of states in (meta)materials with hyperbolic dispersion and related phenomena”	Claude Fabre , <i>Université Pierre et Marie Curie</i> , “Quantum information processing and clock synchronization beyond the standard quantum limit using quantum frequency combs”	Vanderlei S. Bagnato , <i>IFSC/ University of Sao Paulo</i> , “Emergence of Turbulence in a BEC”	Leon Cohen , <i>City University of New York (Hunter College)</i> , “The propagation of noise fields in a dispersive medium”
<u>12:20</u>	Ivdar Gabitov , <i>University of Arizona</i> , “Coherent loss compensation in optical metamaterials”	Walter C. Daugherty , <i>Texas A&M University</i> , “Quantum-Type Reversible Circuits and Algorithms”	Yu-Ju Lin , <i>NIST Gaithersburg and University of Maryland</i> , “Optically synthesized magnetic fields for ultracold neutral atoms”	Patrick Loughlin , <i>University of Pittsburgh</i> , “Local duration-bandwidth product of a propagating pulse”
<u>12:40</u>	Natalia Litchinitser , <i>University at Buffalo</i> , “Transition Metamaterials”	Robert W. Boyd , <i>University of Rochester</i> , “New Results in Quantum Imaging”	Juan Pino , <i>JILA</i> , “Counting phonons: a new window into strongly interacting superfluid”	Koryun Oganessian , <i>Yerevan Physics Institute</i> , “Theory of Smith-Purcell Radiation from Rough Surfaces”

Wednesday Evening, January 6 2010

Plenary Session, Howard E. Brandt, Chair

19:00 **Hui Cao**, *Yale University*, “Recent Developments of Random Lasers”

19:30 **Howard Wiseman**, *Griffith University*, “Platonic Love at a Distance”

20:00 **Chris Greene**, *University of Colorado*, “Ultracold 4-body systems and the Efimov effect”

— Break —

Lasing in Random Media

Hui Cao, Chair

20:50 **Robin Kaiser**, *CNRS, France*, “Random Lasing with Cold Atoms”

21:10 **Martin Weitz**, *Universität Bonn*, “Two-dimensional blackbody radiation from an optical microresonator”

21:30 **Hakan Tureci**, *ETH Zurich*, “Nature of lasing modes in weakly scattering disordered media”

21:50 **Johann Kroha**, *University of Bonn*, “Self-consistent transport theory of diffusive random lasers”

Quantum Information Processing

Howard Wiseman, Chair

Bryan Jacobs, *Johns Hopkins Univ. Applied Physics Lab*, “Hybrid Information Processing”

Louis H. Kauffman, *University of Illinois at Chicago*, “Topological Quantum Information Theory”

Yaakov Weinstein, *Mitre Corporation*, “Constructing Photonic Cluster States for Quantum Computation”

Howard E. Brandt, *U.S. Army Research Laboratory*, “Jacobi Fields in Quantum Circuit Complexity Analysis”

Mixtures and Spinors I

Ofir E. Alon, Chair

Eddy Timmermans, *Los Alamos National Laboratory*, “Pseudo-spin-spin interactions, hysteresis and macroscopic tunneling in ultra-cold atoms”

Fei Zhou, *University of British Columbia*, “Beyond mean-field spin dynamics”

Ludwig Mathey, *NIST, Gaithersburg*, “Supercritical superfluid and vortex unbinding following a quantum quench”

Hossein Sadeghpour, *ITAMP/Harvard University*, “Cold dimer formation and other spin relaxation processes in a buffer-gas cooled magnetic trap”

Quantum Optics

Jon P. Davis, Chair

Sándor Varró, *Hungarian Academy of Sciences*, “Correlations in single-quantum experiments. A note on wave-particle duality”

Thomas Becker, *Max Planck Institute of Quantum Optics*, “New spectroscopic techniques for Rydberg atoms”

Frank A. Narducci, *Naval Air Systems Command*, “Recoil-induced resonances for temperature measurements and all-optical switching”

(Change:)

Edward S. Fry, *Texas A&M University*, “Ring-Down Spectroscopy in an Integrating Cavity”

Thursday Morning, January 7 2010

Plenary Session, Tatjana Curcic, Chair

7:30 **Hyatt M. Gibbs**, *University of Arizona*, “Strongly Coupled Single-Quantum-Dot Nanocavity System: From Vacuum Rabi Splitting to Lasing”

8:00 **Stefan Kröll**, *Lund University*, “Coherent interactions in rare earth ion doped crystals for quantum memory and quantum computer development”

8:30 (*Changed:*) **Elisabeth Giacobino**, *Laboratoire Kastler Brossel, CNRS, UPMC, ENS, Paris*, “Superfluidity of polaritons in semiconductor microcavities”

Semiconductor Lasers I

Hyatt M. Gibbs, Chair

9:10 **Mikhail Belkin**, *The University of Texas at Austin*, “THz quantum cascade laser sources for room-temperature operation”

9:30 **Alexey Belyanin**, *Texas A&M University*, “Instabilities, multimode dynamics, and ultrafast modulation of mid-infrared quantum cascade lasers”

9:50 **Daniel Wasserman**, *University of Massachusetts Lowell*, “Mid-infrared Plasmonics”

10:10 **Patrice Genevet**, *Texas A&M University*, “Experimental observation of Localized vortices in semiconductor Lasers”

Quantum coherence effects in solids

Stefan Kröll, Chair

Olga Kocharovskaya, *Texas A&M University*, “Study of ions interactions in solids by means of EIT”

Philip Hemmer, *Texas A&M University*, “High resolution single spin imaging with NV diamond”

(*Change:*)

Torsten Siebert, *Freie Universitaet Berlin*, “Towards Supercontinuum Spectroscopy and Control of Ultrafast Molecular Processes”

Victor Acosta, *University of California Berkeley*, “Perfect defects? Spin-ensemble magnetometry with Nitrogen-Vacancy centers in diamond”

Mixtures and Spinors II

Chris Greene, Chair

Li You, *QingHua University*, “Mixtures for two spin-1 condensates”

Doerte Blume, *Washington State University*, “s-wave interacting Fermi gas under harmonic confinement”

Klaus Ziegler, *Institut fuer Physik, Universitaet Augsburg*, “Anderson localization in fermionic mixtures”

Ofir E. Alon, *University of Heidelberg*, “Interferences with distinguishable BECs and more”

Matter Wave Localization

Alain Aspect, Chair

Giacomo Roati, *LENS, University of Florence*, “A tunable Bose-Einstein condensate in disordered potentials”

Scott Pollack, *Rice University*, “Interaction Effects in Anderson Localization of an Ultracold Atomic Gas”

Pascal Szriftgiser, *Laboratoire PhLAM, CNRS, USTL*, “The Anderson metal-insulator transition with atomic matter waves”

(*Change:*)

Russell Hart, *University of Innsbruck*, “Metal-Insulator Transitions and Transport of Ultracold Atoms in Optical Lattices”

— Break —

Plenary Session, Leon Cohen, Chair

10:50 **Douglas Stone**, *Yale University*, “Novel Lasing Structures and Phenomena from Ab Initio Theory”

11:20 **Marlan O. Scully**, *Texas A&M and Princeton University*, “The Quantum Solar Cell: Using quantum thermodynamics to mitigate recombination and enhance efficiency”

Novel and complex laser structures

Douglas Stone, Chair

12:00 **Marin Soljacic**, *Massachusetts Institute of Technology*, “Novel platforms for light sources”

12:20 **Lei Xu**, *Fudan University, Shanghai*, “Coupled Microcavities for Single Mode Lasing and Biosensing”

12:40 **Qijie Wang**, *Nanyang Technological University*, “Directional emission from deformed microcavities”

Quantum coherence effects in solids

Olga Kocharovskaya, Chair

Philippe Goldner, *Ecole Nationale Supérieure de Chimie de Paris*, “Coherent Collective Emission in a Random Medium”

Thierry Chanelière, *Laboratoire Aimé Cotton - CNRS*, “Few photons storage in thulium doped crystals”

(*Change:*)

Sergey Polyakov, *NIST*, “Towards DLCZ-type solid state quantum memory: tailored state preparation”

Bose-Einstein condensates

Vanderlei S. Bagnato, Chair

Christoph Weiss, *University of Oldenburg*, “Mesoscopic quantum superpositions of a Bose-Einstein condensate in a periodically shaken double well”

Vitaly Kocharovskiy, *Texas A&M University*, “Analytical solution for BEC critical phenomena”

(*Change:*)

Adilet Imambekov, *Rice University*, “Exact Solution for 1D Spin-Polarized Fermions with Resonant Interactions”

Quantum Solar Energy

Marlan O. Scully, Chair

Ting Shan (Willie) Luk, *Sandia National Laboratory*, “Enhanced spontaneous emission from photonic crystal microcavities”

Oleksiy Roslyak, *Hunter College, CUNY*, “Signatures of carrier multiplication in polariton fluorescence spectra”

Anatoly Svidzinsky, *Texas A&M University*, “Design of a quantum dot (well) solar energy convertor utilizing wide solar spectrum”

Thursday Evening, January 7 2010

Plenary Session, Virgil Sanders, Chair

19:00 **Kent D. Choquette**, *University of Illinois*, “ ‘Green’ Photonic Laser Sources”

19:30 **Yuri Rostovtsev**, *University of North Texas*, “Quantum coherence excited by far-detuned optical pulses: generation of X-ray and nuclear radiation”

20:00 **Peter D. Keefe**, *Keefe and Associates*, “Intellectual Property”

— Break —

Semiconductor Lasers 3
Kent D. Choquette, Chair

*Quantum systems and ultra short pulses:
time and space*
Yuri Rostovtsev, Chair

Intellectual Property
Peter D. Keefe, Chair

Quantum Carpets
Frank A. Narducci, Chair

20:50 **J. Gary Eden**, *University of Illinois*, “Microcavity Plasma Arrays and Coupling of Semiconductor and Gas Phase Plasmas”

Thomas Pfeifer, *Max-Planck Institute for Nuclear Physics*, “Measurement and CEP control of isolated attosecond pulse contrast”

William Blackman, *Carrier, Blackman & Associates*, “Obtaining a Patent”

Kenji Ohmori, *Institute for Molecular Science, Japan*, “Spatiotemporal coherent control with picometer and attosecond precision; From cold molecules to bulk solids”

21:10 **Ravi Jain**, *University of New Mexico*, “Diode-pumped High-Power Mid-IR Fiber Lasers and Amplifiers”

Hebin Li, *Texas A&M University*, “Carrier-envelope phase effect of RF pulses: sine vs cosine”

Dave Morrison, *University of Utah*, “Searching U.S. And Foreign Patents For Related Technologies”

William Case, *Grimmell College*, “Optical Carpets from the Talbot and Talbot-Lau Effects”

21:30 **Weng Chow**, *Sandia National Laboratory*, “Solid-state lighting and the efficiency droop problem”

Hichem Eleuch, *Texas A&M University*, “Analytical Solutions of the Schrodinger Equation in time and space”

Howard J. Brubaker “Marketing Intellectual Property”

Ernst M. Rasel, *Leibniz Universität Hannover*, “Giant Matterwaves”

21:50 **Nikolai Stelmakh**, *University of Texas at Arlington*, “Shaping spontaneous emission pattern by plasmonic nanocavity”

Verònica Ahufinger, *ICREA and Universitat Autònoma de Barcelona*, “Coherent patterning of matter waves with subwavelength localization”

(Change:)
Lijun Wang, *Max-Planck Institute for the Science of Light*, “Cooling and Stochastic Resonance of a Macroscopic Oscillator”