

Quantum Optics V

Conference Program

Cozumel, Mexico
Fiesta Americana Cozumel Dive Resort
November 15-19, 2010

Supported by:

Instituto Nacional de Astrofísica, Óptica y Electrónica (INAOE)
Optical Society of America (OSA)
Joint Quantum Institute (JQI)
Consejo Nacional de Ciencia y Tecnología (CONACYT)
Academia Mexicana de Ciencias (AMC)
Universidad de Guanajuato (Campus León)

Local Committee

Héctor Moya-Cessa
(INAOE)
Luis A. Orozco
(University of Maryland)
Andrei Klimov
(Universidad de
Guadalajara)
Alfred U'Ren
(ICN – UNAM)



Scientific Committee

Octavio Castaños
Rocío Jáuregui
Peter L. Knight
José Luis Lucio
Sascha Wallentowitz

	MONDAY 15 th	
9:00-9:08	Welcome	
9:08-9:15	Mexican Academy of Sciences	Welcome ceremony
9:15-9:45	P. L. Knight	Quantum State Engineering and the Simulation of Nature
9:45-10:00	Toast	
	Chairman: Andrei Klimov	
10:00-10:30	M. Suhail Zubairy	Beyond the Rayleigh limit in optical lithography
10:30-11:00	Gunnar Björk	Quantum lithography—possibilities and limitations
11:00-11:30	Vyktor V. Dodonov	Current status of the experiment on Dynamical Casimir Effect in cavities with laser excited semiconductor mirrors
11:30-11:50	Coffee break	
	Chairman: Alberto Marino	
11:50-12:20	Kevin O'Donnell	Dispersion of entangled photon pairs on an ultrafast timescale
12:20-12:50	Pablo Barberis-Blostein	Manipulation of quantum beats in Cavity QED: a proposal for implementing a probabilistic quantum error correction protocol in an open quantum system.
12:50-13:20	Alberto Marino	Cloning of a Continuous-Variable Entangled State
13:20-16:00	Lunch	
	Chairman: Octavio Castaños	
16:00-16:30	Michel Planat	Pauli graphs when the Hilbert space dimension contains a square: why the Dedekind psi function?
16:30-17:00	Kamil Bradler	Capacities of cloning channels, optical amplifiers and beyond
17:00-17:30	Marko Znidaric	Quantum nonequilibrium steady states: an exact solution
17:30-18:00	Zdenek Hradil	Information hidden in the coherence
18:30-19:30	Poster session 1	

TUESDAY 16th		
	Chairman: Barry Garraway	
8:30-9:00	Luis Orozco	Spontaneous-emission-induced frequency shift; a light shift from coherent drive of a single photon
9:00-9:30	Janos Bergou	Unambiguous discrimination of pure quantum states
9:30-10:00	Ulrike Herzog	Optimized measurement for the maximum-confidence discrimination of mixed quantum states
10:00-10:30	Isabel Sáinz	Non-orthogonal Mutually unbiased basis
10:30-10:50	Coffee break	
	Chairman: Pablo Barberis	
10:50-11:20	Luis L. Sánchez-Soto	Towards a complete characterization of the polarization of quantum states
11:20-11:50	Giorgio Brida	Experimental realisation of sub shot noise quantum imaging
11:50-12:20	Paul Lett	Quantum Images from Four-Wave Mixing in Rb Vapor
12:20-12:50	Arturo Lezama	Light squeezing by single passage through an atomic sample
12:50-13:20	Werner Vogel	Nonclassicality made visible
13:20-16:00	Lunch	
	Chairman: Isabel Sáinz	
16:00-16:30	Dominique Spehner	Entanglement evolution for quantum trajectories
16:30-17:00	Sabrina Maniscalco	Long life to quantum correlations
17:00-17:30	Barry M. Garraway	Decay analysis with reservoir structures
17:30-18:00	Francesco Petruccione	Engineering inverse power law decoherence of a qubit
18:00-18:30	Thomas Seligman	Two two-level atoms in a cavity: Entanglement versus Decoherence and Dirac oscillators.
18:45-19:45	Poster session 2	

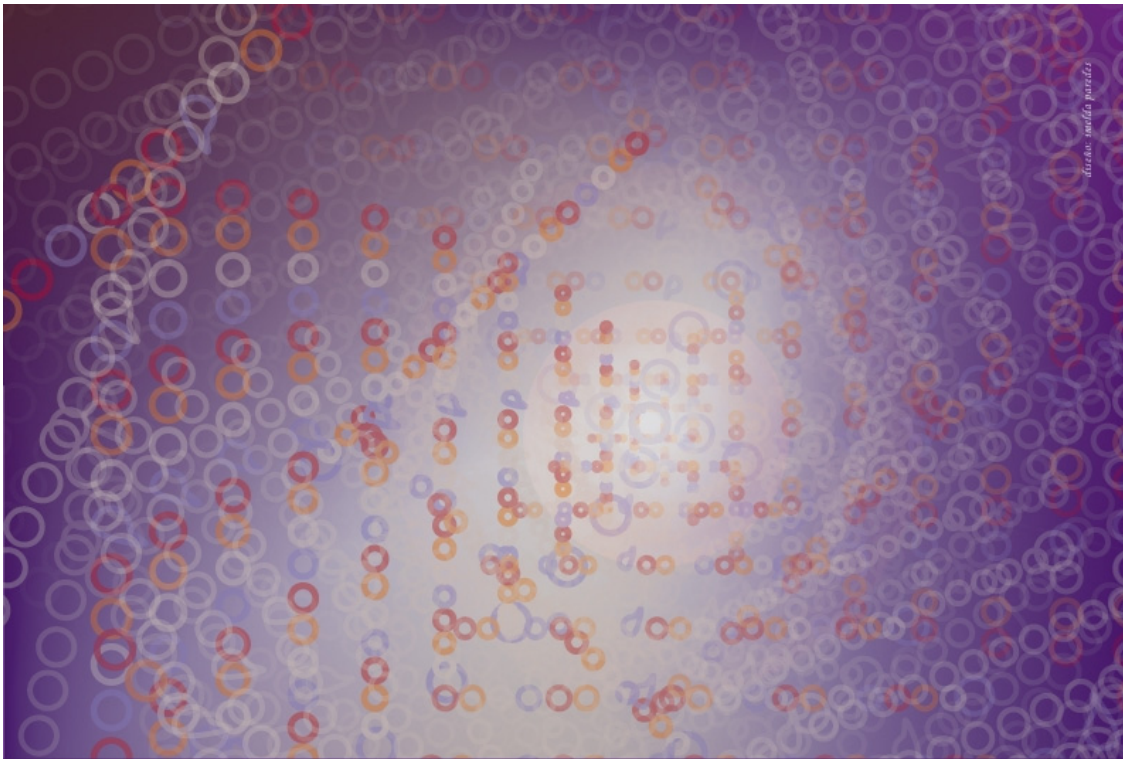
WEDNESDAY 17th		
	Chairman: Sabrina Maniscalco	
8:30-9:00	Wolfgang P. Schleich	Correlations in phase space and the creation of focusing wave packets
9:00-9:30	G.S. Agarwal	Electromagnetically Induced Transparency in Mechanical Effects of Light
9:30-10:00	Stefan Scheel	State and process reconstruction using Kalman filtering -- a diagnostic tool for quantum engineering
10:00-10:30	John C. Howell	Pulling out Small Signals with Weak Values
10:30-10:50	Coffee break	
	Level 3	Chairman: Kevin O'Donnell
10:50-11:20	Saleh Rahimi-Keshari	Quantum process tomography with coherent states
11:20-11:50	Margaret Hawton	Localized photon states
11:50-12:20	Stephen Walborn	An Entropic Einstein-Podolsky-Rosen Steering Criterion
12:20-12:50	Mirko Lobino	Integrated quantum photonics
12:50-13:20	Veneranda Garcés	Observation of quantum emitters injected in tissue: a novel strategy to restrict diffusion through narrow gaps
13:20-13:30	Conference photograph	By the sea restaurant
13:30-16:00	Lunch	
	Level 3	Chairman: Eduardo Gómez
16:00-16:30	Francisco E. Becerra-Chávez	Correlated photon pairs from four-wave mixing in rubidium vapor
16:30-17:00	Vincenzo Tamma	Optical realization of a novel factorization algorithm
17:00-17:30	Lukasz Rudnicki	Dynamical Casimir effect in uniformly accelerated media
17:30-18:00	Denis Sych	Generation of objective randomness via realistic optical states
18:00-18:30	Andrew White	Simulating Quantum Systems in Biology, Chemistry, and Physics

	Level 4	Chairman: Ulrike Herzog
10:50-11:20	Karen Fonseca	An statistical approach to the entanglement decay of two-qubit systems
11:20-11:50	Ilya Sinayskiy	Non-equilibrium thermal entanglement for simple qubit systems
11:50-12:20	Marc Bienert	EIT cooling of a trapped atom in an optical resonator
12:20-12:50	Esteban Castro Ruiz	On the Relativistic Invariance of Entanglement
12:50-13:20	Carlos Wiechers	Improving Quantum Key Distribution Systems by Quantum Hacking Tests
13:20-13:30	Conference photograph	By the sea restaurant
13:30-16:00	Lunch	
	Level 4	Chairman: Sascha Wallentowitz
16:00-16:30	Henrique Di Lorenzo Pires	Measurement of the Spiral Spectrum of Entangled Two-Photon States
16:30-17:00	Vitalie Eremeev	Quantum Statistical Approach to the Theory of Cavityless Laser Action
17:00-17:30	Francois Impens	Driving quantized vortices with quantum vacuum fluctuations
17:30-18:00	Elsi-Mari Laine	Witness for initial system-environment correlations in open system dynamics
18:40-19:30	G. Kurizki	Course on Quantum decoherence and its control- I & II
20:30 –	Conference Dinner	

THURSDAY 18th		
	Chairman: Alfred U'Ren	
8:30-9:00	Ian Walmsley	Elements of a photonic quantum network
9:00-9:30	Igor Jex	Dynamics of quantum systems forming interacting networks
9:30-10:00	Sebastião Pádua	Minimal Tomography and Coincidence maps for characterizing two and four photonic spatial qubits
10:00-10:30	Myungshik Kim	Photonic quantum-state manipulation by single-photon operations
10:30-11:00	Gershon Kurizki	Quantum entanglement in warm baths
11:00-11:20	Coffee break	
	Chairman: Myungshik Kim	
11:20-11:50	Juan Pablo Paz	New ideas on quantum process tomography
11:50-12:20	Gerd Leuchs	A macroscopic singlet Bell state of light
12:20-12:50	Carlos Pineda	Preparing the bound instance of entanglement
12:50-13:20	Rocío Jáuregui	Mechanical properties of propagation invariant beams and their effect in cold atoms
13:20-16:00	Lunch	
	Chairman: Rocío Jáuregui	
16:00-16:30	Alfred U'Ren	Generation and characterization of photon pairs with optimized entanglement characteristics for quantum information processing applications
16:30-17:00	Octavio Castañón	Entanglement entropy of symmetry adapted states in the Dicke Model
17:00-17:30	Sascha Wallentowitz	Non-Markovian decoherence in donor-based charge quantum bits
17:30-18:00	Vanderlei S. Bagnato	Excitations and Characterization of an Atomic Superfluid: emergence of turbulence and characterization
18:00-18:30	Andrei Klimov	Squeezed in n qubit system
18:30-18:40	Closure	
19:00-20:00	G. Kurizki	Course on Quantum decoherence and its control- III

Poster sessions:

Monday 15th		
Jan Sperling	The quantum phase problem in relativistic theories	1
Jorge Arturo Campos González	Single molecule magnets	2
Luis Octavio Castaños Cervantes	Entanglement properties of an ultracold atom interacting with a quantum cavity electromagnetic field	3
Osvaldo Jiménez Farías	Studying the dynamics of entanglement in qubit systems	4
Arturo Zúñiga Segundo	Ion-laser interaction in all regimes	5
Jorge Hirsch	Numerical solutions to the Dicke Hamiltonian	6
Francisco E. Becerra-Chávez	Calibration of a High Efficiency Transition Edge Sensor Photon-Number-Resolving Detector for Quantum Information Applications	7
Aurel Gabris	Quantum walk in an optical feedback loop with reflections	8
Malena Hor-Meyll	Controlled dynamical generation of arbitrary two-qubit state	9
Oxana Mishina	Death and revival of an electromagnetically induced transparency in hot alkali gases	10
Fabrizio Toscano	Experimental observation of genuine non-Gaussian entanglement	11
Victor Montenegro	Creation of entanglement of two atoms coupled to two distant cavities with losses	12
Juan José Ortega	Phase locked lasers for EIT	13
Karina Garay	Photon pair sources based on optical fibers	14
Luis Orozco	Atoms Talking to SQUIDs	15
Tuesday 16th		
Birger Seifert	Quantum state reconstruction of a squeezed laser field by unbalanced homodyning	1
Jonas Söderholm	Quantum degrees of polarization and unpolarized states	2
Christian Schmiegelow	Selective and efficient quantum process tomography with single photons	3
Luis Manuel Arévalo-Aguilar	The relative phase gate	4
Nadja K. Bernardes	Rate analysis for a hybrid quantum repeater	5
Martin Stefanak	Spatial correlations in quantum walks with two particles	6
Fernando Lombardo	Geometric phase with nonunitary evolution in presence of a quantum critical environment	7
Goce Chadzitaskos	CNOT for laser pulse	8
Alejandra Judith Gutiérrez	Entanglement witnesses for bipartite qutrit states	9
Bruno G. Taketani	Optimal teleportation scheme for noise input states	10
Omar Aguilar-Loreto	Study of the interaction between a quantized field, a mirror and a two level atom	11
Wallon A.T. Nogueira	Interference and complementarity for two-photon hybrid entangled states	12
Barry M. Garraway	Photonic qubit logic in multi-mode cavities	13
Bruno de Moura Escher	Quantum limits for lossy optical interferometry	14
Héctor Moya-Cessa	Simulating nonlinear coherent states in photonic lattices	15



durán: maría pineda

La Academia Mexicana de Ciencias invita a la conferencia dictada por el

PROFESSOR SIR PETER L. KNIGHT

Imperial College, U.K.

“QUANTUM ENGINEERING AND THE SIMULATION OF NATURE”

*Con motivo de su ingreso a la Academia Mexicana de Ciencias
como Miembro Correspondiente*

Lunes 15 de noviembre de 2010
9:00 horas

En el marco de la Conferencia “Quantum Optics V”
que tendrá lugar del 15 al 19 de noviembre

Cozumel, México
<http://speckle.inaoep.mx/QOll/qov.html>

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