

## Workshop on Quantum Noise, 14-18 May 2007, Caloundra, Queensland, Australia Schedule at a Glance

Time	Monday, 14 May		
14:00-18:00	Arrival and registration (hotel check-in time: 14:00)		
14:30-17:30	ACQAO CI Meeting		
18:00-19:00	Workshop reception - get together drinks		
Time	Tuesday, 15 May	Wednesday, 16 May	Thursday, 17 May
08:20-08:30	Opening address by Hans Bacher	<b>Gardiner Symposium</b> Opening address by Peter Drummond	
08:30-09:00	Chair - Hans Bacher  Robert Ballagh (invited) <i>Thermalisation and vortex formation in a mechanically perturbed condensate</i>	<b>Gardiner Symposium</b> Chair - Peter Drummond  Crispin Gardiner (invited) <i>Bragg Scattering of Cooper Pairs: Beyond the Pseudopotential Approximation</i>	Chair - Kenneth Baldwin  Gerd Leuchs (invited) <i>Non classical effects in light matter interaction</i>
09:00-09:30	Ed Hinds (invited) <i>Atom detection and photon production in a scalable, open, optical microcavity</i>	Subhash Chaturvedi (invited) <i>Dirac, Square Root and Wigner Distributions</i>	Silvania Pereira (invited) <i>Exploring new data channels in optical data storage</i>
09:30-09:45	Joseph Hope <i>Controlling the mechanical state of a trapped atom</i>	Gerard Milburn (invited) <i>Circuit QED transducers for quantum electromechanical systems</i>	Eric Cavalcanti <i>Criteria for Bohm's version of the EPR paradox</i>
09:45-10:00	Andrei Sidorov <i>Quantum degenerate gas in a corrugated potential</i>		Kate Wagner <i>Spatially entangled laser beams</i>
10:00-10:30	Coffee break		
10:30-11:00	Chair - Peter Hannaford  Chris Westbrook (invited) <i>Producing and detecting correlated atoms</i>	<b>Gardiner Symposium</b> Chair - Robert Ballagh  Hans Bacher (invited) <i>Experiments with quantum noise</i>	Chair - Joel Corney  Matthias Troyer (invited) <i>Accurate simulation of quantum systems</i>
11:00-11:15	Chaohong Lee <i>Adiabatic Mach-Zehnder Interferometry on a Quantized Bose-Josephson Junction</i>	Howard Carmichael (invited) <i>Entanglement between a laser source and driven qubit</i>	Guifre Vidal <i>Classical simulation of quantum lattice systems with PEPS</i>
11:15-11:30	Andrew Truscott <i>A Metastable Helium Atom Laser</i>		Xia-Ji Liu <i>Phase diagram of a strongly interacting polarized Fermi gas in one dimension</i>
11:30-11:45	Xiong-Jun Liu <i>Spin Hall Effect in a Cold Atomic Gas</i>	Peter Zoller (invited) <i>Quantum Optics with Cold Atoms and Molecules</i>	Philippe Corboz <i>Gaussian Quantum Monte Carlo for fermions with symmetry projection</i>
11:45-12:00	Mandip Singh <i>Bose-Einstein Condensation on a Permanent Magnetic Lattice Atom Chip</i>		Andrew Sykes <i>Quantum phase transition in ultra-cold 1D Bose gas</i>
12:00-13:30	Lunch break		
13:30-14:00	Chair - Matthew Davis  Brian Anderson (invited) <i>Bose-Einstein Condensation in Bumpy Potentials</i>	<b>Gardiner Symposium</b> Chair - Margaret Reid  Matthew Collett (invited) <i>Not all done with mirrors: inputs and outputs for arbitrary fields</i>	Chair - Murray Olsen  Simon Gardiner (invited) <i>Recent progress on number conserving formulations in an ultracold Bose Gas</i>
14:00-14:15	Matthew Jeppesen <i>Reducing the divergence of an atom laser beam</i>	Scott Parkins (invited) <i>Quantum phase transitions in optical cavity QED</i>	Paul Lett <i>Strongly squeezed light from four-wave mixing in hot Rb vapor</i>
14:15-14:30	Adrian Ratnapala <i>Condensate Formation and Quantum Shock Fronts with Optical Dipole Traps</i>		Mattias Johnsson <i>Generating quadrature squeezing in an atom laser through self-interaction</i>
14:30-14:45	Lincoln Turner <i>Spinor oscillations in an antiferromagnetic spin-1 condensate</i>	Jurgen Fuchs <i>Optical Trapping of Ultracold Fermionic <math>6\text{Li}</math> Atoms</i>	Charles Harb <i>Observation of Optical Squeezing at Microwave Side-Band Frequencies</i>
14:45-15:00	John Close <i>Single Atom Detection and the Squeezed Atom Laser</i>	Chris Ticknor <i>Energy Dependence of Long Range Polar molecule scattering</i>	Simon Haine <i>Measurement and Teleportation of the Quantum State of an Atomic Beam</i>
15:00-15:30	Coffee		
15:30-18:30	quantum noise at the beach and own dinner arrangements	quantum noise at the beach	quantum noise at the beach and own dinner arrangements
18:30-19:30		<b>18:30-20:30 Workshop Dinner</b>	
19:30-21:00	<b>Poster Session 1</b>		<b>Poster Session 2</b>
Time	Friday, 18 May		
08:30-10:00	Free time and departure		
10:00	Hotel check-out time		

### Poster Session 1: Tuesday 15 May, 7:30pm - 9:00pm

1. Timothy Vaughan, Quantum limits to centre-of-mass measurements.
2. Peter Drummond, Universal thermodynamics of strongly interacting Fermi gases.
3. Sang Wook Kim, Atom ratchet based upon an interplay between coherence and decoherence.
4. Bryan Dalton, Grassmann phase space theory of the Jaynes-Cummings model.
5. Graham Dennis, Beam quality of an atom laser.
6. Kasper Therkildsen, Coherent Quantum Engineering of Free-Space Laser Cooling.
7. Erik van Ooijen, Large atom number BEC of sodium.
8. Andy Ferris, Entanglement of atoms by four-wave mixing in an optical lattice.
9. Matthew Davis, Analysis of the Berezinskii-Kosterlitz-Thouless Phase for Trapped Bose Gases .
10. Sebastian Wuester, Dynamics of quantum fluctuations in collapsing and expanding Bose-Einstein condensates.
11. Kalai Kumar Rajagopal, Yukawa bosons in two-dimensional harmonic confinement.
12. Magnus Ogren, Finite-size effects in atom-atom correlations in molecular dissociation.
13. Karen Kheruntsyan, Crossover to a quasi-condensate in a weakly interacting trapped 1D Bose gas.
14. Ashton Bradley, The quantum de Laval nozzle.
15. Sarah Midgley, Phonon Superradiance in Dilute Gas Bose-Einstein Condensates.
16. Angela White, Exploring Signature Change and Trans-Planckian Physics in a BEC.
17. Sergey Prants, Motion of cold atoms in an optical lattice: between chaos and noise.
18. Sebastian Schnelle, Superfluid to Mott insulator transition in an optical honeycomb lattice.

### Poster Session 2: Thursday 17 May, 7:30pm - 9:00pm

1. Hari Prakash, Quantum analysis of a nonlinear beam splitter with second-order nonlinearity.
2. Lev Plimak, Nonlinear quantum-statistical response, phase space, and quantisation of nonlinear systems.
3. Alexander Akulshin, Atomic media with controllable dispersion.
4. Ben Buchler, Electromagnetically induced transparency in rubidium vapor and squeezed light at 795nm.
5. Andre Carvalho, Stabilising entanglement by quantum jump-based feedback.
6. Margaret Reid, Proposal to demonstrate macroscopic entanglement.
7. Guang-Ri Jin, Storage of spin squeezing in a two component Bose-Einstein condensate.
8. Stuart Wilson, A review of risk-sensitive quantum control.
9. Murray Olsen, Numerical representation of quantum states in phase space.
10. Joel Corney, Stochastic gauges for Gaussian Quantum Monte Carlo Methods.
11. Joel Corney, Simulating the quantum dynamics of polarisation squeezing in fibres.
12. David Barry, Phase space methods for the Ising model.
13. John Hedditch, XMDS revisited: solving SDEs simply and quickly.
14. Matt James, Quantum Noise and Control Design.
15. Ranjana Prakash, Generation of any desired superposition of coherent states  $|z\rangle$  and  $|-z\rangle$ .
16. Pradyumna Pathak, A Spin Squeezing Operator.
17. Stanley Chan, Entanglement measure with local uncertainty relation.
18. Scott Hoffmann, Phase-Space Methods for Bose-Einstein Condensate Collisions.
19. Marcos de Oliveira, Multipartite Entanglement in Quantum Phase Transitions.
20. Hyunseok Jeong, Generation of Schrödinger cat states from photon number states.