

Quantum Information Processing, Communication and Control

QIPC² 2011

8 - 9 December 2011, Mont-aux-Sources Hotel, Drakensberg

Program

Thursday, 8 December 2011

Arrive before lunch

12:30 - 14:00 **Al Fresco lunch on the patio**

Move to conference room for workshop

14:00 - 15:30 **First afternoon session: Quantum Computing and**
Chairman: Francesco Petruccione

14:00 - 14:30 **Thomas Konrad**
QIPC and Quantum Control

14:30 - 15:00 **Stef Roux**
Overview of Quantum Optics Research in the Mathematical
Optics Group at the CSIR National Laser Centre

15:00 - 15:15 **Melanie McClaren**
Measuring Entanglement

15:15 - 15:30 **Angela Dudley**
Amplitude damping channel for orbital angular momentum

15:30 - 16:00 **Mid afternoon tea and refreshments**

16:00-17:30 **Second afternoon session: Quantum Computing and**
Chairman: Hermann Uys

16:00-16:15 **Alpha Ibrahim**

Parameter dependence of the decoherence of quantum orbital angular momentum entanglement in atmospheric turbulence

- 16:15-16:30** **Humairah Bassa**
Quantum Computing with Photons
- 16:30-16:45** **Sujit**
Monitoring Rabi oscillations of trapped ions.
- 16:45 - 17:00** **Sandeep**
Teleporting qudits
- 17:00 - 17:30** **Discussion**
- 19:00** **Sundowners**
- 19:30** **Dinner**

Friday, December 9, 2011

- 07:30** **Breakfast**
- 08:30** Move to conference room for workshop
- 08:30 - 10:30** **First morning session: Cold atoms, ions, and QKD**
Chairman: Lourens Botha
- 08:30-09:00** **Francesco Petruccione**

From Open Quantum Systems to Quantum Efficiency
- 09:00-09:30** **Hermann Uys**
Computationally relevant quantum simulation with trapped
- 09:30-09:45** **Malehohonolo Semonyo**
Magneto Optical Trap: A first step towards BEC
- 09:45-10:00** **Michael Morrissey**
Towards Africa's first Bose-Einstein Condensation
- 10:00-10:15** **Sharmini Pillay**
An overview of experimental QKD and UKZN

- 10:15-10:30** **Mhlambululi Mafu**
Finite-size security in quantum key distribution protocols
- 10:30 - 11:00** **Mid morning tea / coffee and refreshments**
- 11:00 - 12:30** **Second morning session: Open Quantum Systems,**
Chairman: Thomas Konrad
- 11:00 - 11:15** **Filippo Girdali**
Designing reservoirs for $1/t$ decoherence process in the Jaynes-Cummings model
- 11:15- 11:30** **Ilya Sinayisky**
Open quantum walk implementation of dissipative quantum computing
- 11:30- 11:45** **Anne Ghesquiere**
Entangling dynamics in an oscillating bipartite, Gaussian state coupled to reservoirs
- 11:45 - 12:15** **Lourens Botha**
Overview of coherent control with femtosecond pulses
- 12:15 - 12:30** **General Discussion**
- 12:30** **Workshop ends**
- 12:30** **Lunch**
- 14:00** **Departure**