Contribution ID: **180** Type: **Oral Presentation**

Tracking a quantum wavefunction in the presence of noise

Friday, 15 July 2011 09:00 (15 minutes)

<p>We simulate real-time quantum state estimation due to a sequence of so-called ”unsharp” measurements applied to a two-level system undergoing Rabi oscillations. These measurements allow an experimentalist to extract information about the system without destroying the quantum state. They can be realized physically through the use of auxilary quantum states in addition to the quantum state of interest. Here we demonstrate that high fidelity state estimation is possible even in the presence of significant dephasing and amplitude noise, thus allowing the quantum state to be monitored long beyond the coherence time set by the noise in the absence of measurements.

Level (Hons, MSc,
   PhD, other)?

Other

Consider for a student
   award (Yes / No)?

No

Would you like to
 submit a short paper
 for the Conference
 Proceedings (Yes / No)?

No

Primary author: Dr UYS, Hermann (National Laser Centre, CSIR)

Co-author: Prof. KONRAD, Thomas (UKZN)

Presenter: Dr UYS, Hermann (National Laser Centre, CSIR)

Session Classification: LOS

Track Classification: Track C - Lasers, Optics and Spectroscopy