

Session Program

11-16 Dec 2022



24th Australian Institute of Physics Congress

Precision and Quantum Sensing Workshop

Tuesday 13 December

14:00

Precision and Quantum Sensing Workshop: PQS 1 - Keynote Session 1

Session | **Location:** Adelaide Convention Centre, Room R5 | **Convener:** Warwick Bowen

14:00–14:30 **Quantum innovation in Australia**

Speaker

Dr Cathy Foley

14:30–15:00 **Quantum Sensors for Navigation and Mobile Gravimetry**

Speaker

Philippe Bouyer

15:00–15:30 **Hybrid spin-phonon systems in diamond**

Speaker

Ania Bleszynski Jayich

15:30

16:00

Precision and Quantum Sensing Workshop: PQS 2 - Magnetometry 1

Session | **Location:** Adelaide Convention Centre, Room R5 | **Convener:** John Close

16:00–16:30 **Quantum microscopy with van der Waals heterostructures**

Speaker

Jean-Philippe Tetienne

16:30–16:45

Unambiguous measurement of DC field in a cold atom magnetometer with sensitivity below 1 pT/rHz

Speaker

Mr Hamish Taylor

16:45–17:00

Towards single-shot waveform magnetometry via quantum compressive sensors

Speaker

Alexander Tritt

17:00–17:15

The magic of three levels: Robust quantum magnetometry at ultra low frequencies

Speaker

Samuel White

17:15–17:30 **Integrated optomechanical Magnetometer**

Speaker

Fernando Gotardo

17:30

Wednesday 14 December

11:00

Precision and Quantum Sensing Workshop: PQS 3 - Keynote Session 2

Session | **Location:** Adelaide Convention Centre, Room R5 | **Convener:** Scott Foster

11:00-11:30 **Optical Frequency Combs and Quantum Metrology**

Speaker

Prof. Scott Diddams

11:30-12:00 **System engineering quantum technology for defence applications**

Speaker

Dr Susannah Jones

12:00-12:30 **Towards the realization of next-generation compact quantum sensors**

Speaker

Dr Michael Slocum

12:30

14:00

Precision and Quantum Sensing Workshop: PQS 4 - Magnetometry 2

Session | **Location:** Adelaide Convention Centre, Room R5 | **Convener:** Ania Bleszynski Jayich

14:00-14:30 **Quantum diamond magnetometry for high pressure sensing**

Speaker

Liam Hanlon

14:30-15:00

DC magnetometry below the Ramsey limit with rapidly rotating diamonds

Speaker

Alexander Wood

15:00-15:15

High-bandwidth vector AC magnetometry using nitrogen-vacancy centres in diamond

Speaker

Michael Barson

15:15-15:30

Vector Magnetometry Using Nitrogen-vacancy Centers in Diamond

Speaker

Chris Lew

15:30

16:00

Precision and Quantum Sensing Workshop: PQS 5 - Atomic and Optical Clocks

Session | **Location:** Adelaide Convention Centre, Room R5 | **Convener:** Andre Luiten

16:00-16:15

Development & Performance of a Portable Dual-Colour Two-Photon Rb Clock

Speaker

Sarah Scholten

16:15-16:30

Towards a compact Ytterbium magneto optical trap for use in precision timekeeping applications

Speaker

Benjamin White

16:30-16:45

Effects of Wavefront Curvature in Optical Atomic Beam Clocks

Speaker

Aidan Strathearn

16:45-17:00

A laser-cooled optical beam clock for portable applications

Speaker

Rachel Offer

17:00-17:15

Developing a Free-Space Quantum-Secure Time Transfer System

Speaker

Ben Sparkes

17:15-17:30

Offset Decoding with A1 Sequences in Digitally Enhanced Interferometry

Speaker

Anneshwa Dey

17:30

Thursday 15 December

11:00

Precision and Quantum Sensing Workshop: PQS 6 - Magnetometry 3

Session | **Location:** Adelaide Convention Centre, Room R5 | **Convener:** Susannah Jones

11:00-11:30

Underwater Operations of an Atomic Magnetometer for Magnetic Anomaly Detection

Speaker

Chris Perrella

11:30-12:00

Quantum sensing from a distance through diamond-doped glass hybrid optical fibres

Speaker

Heike Ebendorff-Heidepriem

12:00-12:15

Diamond-doped Optical Fibres for Remote Magnetometry Applications

Speaker

Brant Gibson

12:15-12:30

Isotopic enrichment of diamond for bulk nitrogen-vacancy magnetometry applications

Speaker

David Simpson

12:30

14:00

Precision and Quantum Sensing Workshop: PQS 7 - Quantum Imaging

Session | **Location:** Adelaide Convention Centre, Room R5 | **Convener:** Elizaveta Klantsataya

14:00-14:30

Sub-wavelength quantum imaging for astronomy

Speaker

Dr Zixin Huang

14:30-14:45

A practical quantum sensing wide-field probe for precision magnetic imaging

Speaker

Mr Islay Robertson

14:45-15:00

Polarization dependent quantum correlation measurements of two nitrogen-vacancy color centres in diamond

Speaker

Davin Yue Ming Peng

15:00-15:15

Quantum-enabled super resolution imaging

Speaker

Larnii Booth

15:15-15:30

Diamond-based Quantum Sensors for Next Generation NMR Applications**Speaker**

Liam Hall

15:30

16:00

Precision and Quantum Sensing Workshop: PQS 8 - Other Precision and Quantum Sensors**Session** | **Location:** Adelaide Convention Centre, Room R5 | **Convener:** Glen Harris

16:00-16:15

Quantum Spectral Analysis by Landau-Zener Transitions**Speaker**

Christopher Bounds

16:15-16:30

Progress Towards Quantum-Enhanced Atomic Gravimetry**Speaker**

Simon Haine

16:30-16:45

Coupled Photonic Resonators for High-Performance Optomechanical Sensors**Speaker**

Benjamin Carey

16:45-17:00

Measuring fundamental thermal phase fluctuations in a passive fibre resonator**Speaker**

Mr Jonathan Hedger

17:00-17:15

Towards perfect quantum sensing: gate-controlled bi-superconducting quantum interference devices.**Speaker**

Thomas Kong

17:15-17:30

Einstein-Podolsky-Rosen Entangled Interferometers**Speaker**

Daniel Gould

17:30