

Dr. Robert J. Sewell

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PERSONAL

CITIZENSHIP Australia.

RESIDENCY Spain.

LANGUAGES English (native), Spanish (fluent), French (fair), Brazilian Portuguese (basic).

EXPERTISE

Experimental quantum optics & quantum metrology; spin squeezing & entanglement measures; atomic magnetometry; nonlinear optics; laser cooling & trapping; Bose-Einstein condensates; & microfabricated atom chip technology.

EDUCATION

2005-2009 **Ph.D.** in Physics. [Imperial College London](#), U.K.

Matter Wave Interference on an Atom Chip. Supervisor: Prof. E.A. Hinds.

1996-2004 **B.Sc. (1st Class Honors)** in Physics, [University of Melbourne](#), Australia.

1996-2002 **B.A. (1st Class Honors)** in Philosophy & Social Theory, [University of Melbourne](#), Australia.

RESEARCH EXPERIENCE

2010-2014 **Postdoctoral Researcher**, [ICFO](#), Castelldefels (Barcelona), Spain.

2009 **Postdoctoral Researcher** [Imperial College London](#), U.K.

TEACHING EXPERIENCE

2014 **Lectured**, at [Winter School](#), Olomouc, Czech Republic.

Lectured on quantum optics, quantum metrology & atomic magnetometry.

2010-2011 **Lectured** for Quantum Optics course, [M.Sc. in Photonics BCN](#), Spain.

Lectured on landmark atomic physics experiments in quantum optics.

2009-2013 **M.Sc. & undergraduate supervision**, [ICFO](#), Barcelona, Spain.

Supervised M.Sc. & final year undergraduate students' projects.

2005-2009 **Physics Lab. Demonstrator**, [Imperial College London](#), London, UK.

Taught in 1st year labs & 3rd year labs.

2004 **Physics Lab. Demonstrator**, [University of Melbourne](#), Australia.

Taught in 2nd & 3rd year labs.

2001-2002 **Tutor** in Physics, Mathematics & Statistics, [McGill University](#), Montreal, Canada.

1997-1998 **Tutor** in Physics & Mathematics [University of Melbourne](#), Australia.

AWARDS & FELLOWSHIPS

2010 Marie Curie Research Training Network ER Fellowship.

2009 EPSRC PhD Plus Postdoctoral Fellowship.

2006 UK Overseas Research Students Awards Scheme Scholarship.

PROFESSIONAL ACTIVITIES

- Referee for Physical Review X, Physical Review Letters, Physical Review A, Optics Express, New Journal of Physics, Journal of Physics B, European Journal of Physics D & Journal of Visualized Experiments.
- Organizer, "[EMALI 2010 Conference](#)", Barcelona.

- Development & implementation of laser safety protocols at [ICFO](#).
- Member of [EPS](#), [APS](#) & [OSA](#).

PUBLICATIONS

PUBLICATION SUMMARY

- 16 refereed publications, including: 1 Nature, 1 Nature Photonics, 4 Physical Review Letters, 1 Physical Review X, 1 Physical Review A, 3 New Journal of Physics, 1 Applied Physics Letters & 1 Journal of Physics B.
- 8 publications as **lead author**, 2 as **last author**.
- **Citations since 2009**: 149 ([Scopus](#)), 118 ([ResearcherID](#)), 209 ([Google](#)).[§]
- **h-index**: 5 ([Scopus](#)), 5 ([ResearcherID](#)) 7 ([Google](#)).[§]
- **i10 index**: 5 ([Google](#)).[§]

[§]Citation data as of June 5, 2014.

REFEREED PUBLICATIONS

16. **R. J. Sewell**, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana, & M.W. Mitchell. Ultra-sensitive atomic spin measurements with a nonlinear interferometer. [Physical Review X \(in press\)](#).^{||}
15. G. Puentes, G. Colangelo, **R.J. Sewell**, & M.W. Mitchell. Planar quantum squeezing via quantum non-demolition measurements in cold atomic ensembles. [New Journal of Physics 15, 103031 \(2013\)](#).
14. N. Behbood, M. Napolitano, G. Colangelo, F. Martin Ciurana, **R. J. Sewell**, & M.W. Mitchell. Feedback-cooling of an atomic spin ensemble. [Physical Review Letters 110\(10\):103601 \(2013\)](#).
13. G. Colangelo, **R.J. Sewell**, N. Behbood, F. Martin Ciurana, G. Triginer, & M.W. Mitchell. Quantum atom-light interfaces in the gaussian description* for spin-1 systems. [New Journal of Physics 15, 103007 \(2013\)](#).
12. **R.J. Sewell**, M. Napolitano, N. Behbood, G. Collangelo & M.W. Mitchell. Certified quantum non-demolition measurement of a macroscopic material system. [Nature Photonics, 7, 517 \(2013\)](#).
11. N. Behbood, F. Martin Ciurana, G. Colangelo, M.W. Mitchell & **R.J. Sewell**. Real-time vector field tracking with a cold-atom magnetometer. [Applied Physics Letters 102\(17\):173504 \(2013\)](#).[‡]
10. P. Hauke, **R.J. Sewell**, M.W. Mitchell, & M. Lewenstein. Quantum control of spin-correlations in ultracold lattice gases. [Physical Review A 87\(2\):021601\(R\) \(2013\)](#).
9. **R.J. Sewell**, M. Koschorreck, M. Napolitano, B. Dubost, N. Behbood, & M.W. Mitchell. Magnetic sensitivity beyond the projection noise limit by spin squeezing. [Physical Review Letters 109\(25\):253605 \(2012\)](#).
8. M.W. Mitchell, M. Koschorreck, M. Kubasik, M. Napolitano, & **R.J. Sewell**. Certified quantum non-demolition measurement of material systems. [New Journal of Physics 14\(8\):085021 \(2012\)](#).
7. B. Dubost, M. Koschorreck, M. Napolitano, N. Behbood, **R.J. Sewell**, & M. W. Mitchell. Efficient quantification of non-demolition Gaussian spin distributions. [Physical Review Letters 108\(18\):183602 \(2012\)](#).
6. M. Napolitano, M. Koschorreck, B. Dubost, N. Behbood, **R.J. Sewell**, & M. W. Mitchell. Quantum Optics & the “Heisenberg Limit” of Measurement. [Optics & Photonics News 22, 40 \(2011\)](#).
5. **R.J.Sewell** & M.W. Mitchell. Collaboration & precision in quantum measurement. [Physics Today 64\(12\):72 \(2011\)](#).[†]

4. F.A. Beduini, N. Behbood, Y. de Icaza, B. Dubost, M. Koschorreck, M. Napolitano, A. Predojević, **R.J. Sewell**, Sewell, F. Wolfgramm & M.W. Mitchell. Metrología cuántica con átomos y fotones. *Óptica pura y aplicada*, 44(2):315 (2011).
3. M. Napolitano, M. Koschorreck, B. Dubost, N. Behbood, **R.J. Sewell**, & M.W. Mitchell. Interaction-based quantum metrology showing scaling beyond the Heisenberg limit. *Nature* 471(7339):486 (2011).[§]
2. F. Baumgärtner, **R.J. Sewell**, S. Eriksson, I. Llorente-García, J. Dingjan, J. P. Cotter, & E. A. Hinds. Measuring Energy Differences by BEC Interferometry on a Chip. *Physical Review Letters* 105(24):243003 (2010).
1. **R.J. Sewell**, J. Dingjan, F. Baumgärtner, I. Llorente-García, S. Eriksson, E. A. Hinds, G. Lewis, P. Srinivasan, Z. Moktadir, C. O. Gollasch & M. Kraft. Atom Chip for BEC Interferometry. *Journal of Physics B: Atomic, Molecular & Optical Physics*. 43(5):051003 (2010).^{*}

|| Highlighted in Editors' Choice section of *Science* in 2014.

‡ Selected an Editor's Pick in device physics by *Applied Physics Letters* in 2014.

§ Highlighted in *Physics World* March 24, 2011, and at *2Physics*, April 10, 2011.

† Translated & published in *Parity (Japanese Physics Magazine)* in 2012.

* Selected as one of the *Journal of Physics B Highlight Papers* in 2010.

PREPRINTS

1. M.W. Mitchell, R. J. Sewell, M. Napolitano, M. Koschorreck, B. Dubost, N. Behbood & M. Kubasik. Quantum metrology with cold atomic ensembles. [arXiv:1403.1964 \[quant-ph\]](https://arxiv.org/abs/1403.1964).

POPULAR ARTICLES

3. M. Campoy Quiles & **R.J. Sewell**. ¡Y Se Hizo La Luz!... Láser. *Ciencia, Publicación Semestral de la Agrupación Astronómica Rías Baixas* 8:13 (2010).
2. **R.J.Sewell** & M.W. Mitchell. Collaboration & precision in quantum measurement. *Physics Today* 64(12):72 (2011).
1. **R.J. Sewell** & M.W. Mitchell. コラホて上かる測定精度. *Parity (Japanese Physics Magazine)* 27(10):50 (2012).

CONFERENCE PRESENTATIONS

INVITED TALKS

2. **2014 Información cuántica en España (Zaragoza, Spain):** R. J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M. W. Mitchell, Quantum-enhanced atomic magnetometry.
1. **2010, J2IFAM (Barcelona, Spain):** R.J. Sewell, F. Baumgärtner, R.J. Sewell, S. Eriksson, I. Llorente-García, J. Dingjan, & E. A. Hinds, Atom chip BEC Interferometer.

CONTRIBUTED TALKS*

35. **2014 EGAS (Lille, France):** N. Behbood, G. Colangelo, F. Martin Ciurana, M. Napolitano, G. Tóth, R. J. Sewell & M. W. Mitchell, Generation of a macroscopic spin singlet.
34. **2014 CEWQO (Brussels, Belgium):** R.J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M. W. Mitchell, Certified quantum non-demolition measurement of atomic spins.
33. **2014 CEWQO (Brussels, Belgium):** G. Colangelo, F. Martin Ciurana, N. Behbood, G. Puentes, R.J. Sewell & M.W. Mitchell, Generation of a Planar Squeezed state in a cold atomic ensemble.
32. **2014 CEWQO (Brussels, Belgium):** N. Behbood, G. Colangelo, F. Martin Ciurana, M. Napolitano, G. Tóth, R. J. Sewell & M. W. Mitchell, Generation of a macroscopic spin singlet.
31. **2014 CLEO:QELS (San Jose, U.S.A.):** R.J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M. W. Mitchell, Certified quantum non-demolition measurement of atomic spins.
30. **2014 CLEO:QELS (San Jose, U.S.A.):** N. Behbood, G. Colangelo, F. Martin Ciurana, M. Napolitano, G. Tóth, R. J. Sewell & M. W. Mitchell, Spin cooling via incoherent feedback in an ensemble of cold ^{87}Rb atoms.
29. **2014 DAMOP (Madison, U.S.A.):** R.J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M. W. Mitchell, Certified quantum non-demolition measurement of atomic spins.
28. **2014 DAMOP (Madison, U.S.A.):** G. Colangelo, N. Behbood, F. Martin Ciurana, G. Puentes, R.J. Sewell & M.W. Mitchell, Generation of Planar squeezing in a cold atomic ensemble.
27. **2014 DAMOP (Madison, U.S.A.):** N. Behbood, G. Colangelo, F. Martin Ciurana, M. Napolitano, G. Tóth, R. J. Sewell & M. W. Mitchell, Spin cooling via incoherent feedback in an ensemble of cold ^{87}Rb atoms.
26. **2014 Entanglement Detection & Quantification (Bilbao, Spain):** N. Behbood, G. Colangelo, F. Martin Ciurana, R. J. Sewell & M. W. Mitchell, Generation of macroscopic singlet states in a cold atomic ensemble.
25. **2014 QIM (Berlin, Germany):** N. Behbood, G. Colangelo, F. Martin Ciurana, M. Napolitano, R. J. Sewell & M. W. Mitchell, Spin cooling via incoherent feedback in an ensemble of cold ^{87}Rb atoms.
24. **2014 QIM (Berlin, Germany):** R. J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M. W. Mitchell, Ultra-sensitive atomic spin measurements with a nonlinear interferometer.
23. **2013 Quantum Simulators (Benasque, Spain):** R. J. Sewell, P. Hauke, M. W. Mitchell & M. Lewenstein, Quantum control of spin-correlations in ultracold lattice gases.
22. **2013 QuAMP (Swansea, U.K.):** R. J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M. W. Mitchell, Simultaneous observation of super-Heisenberg scaling & spin squeezing in a nonlinear measurement of atomic spins.

21. **2013 RSEF (Valencia, Spain):** R. J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M. W. Mitchell, Simultaneous observation of super-Heisenberg scaling & spin squeezing in a nonlinear measurement of atomic spins.
20. **2013 ICSSUR (Nuremberg, Germany):** G. Colangelo, N. Behbood, F. Martin Ciurana, G. Puentes, R.J. Sewell & M.W. Mitchell, Generation of planar quantum squeezing in an atomic ensemble.
19. **2013 CLEO:QELS (San Jose, USA):** P. Hauke, R. J. Sewell, M. W. Mitchell & M. Lewenstein, Quantum control of spin-correlations in ultracold lattice gases.
18. **2013 CLEO:QELS (San Jose, USA):** R. J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M. W. Mitchell, Simultaneous observation of super-Heisenberg scaling & spin squeezing in a nonlinear measurement of atomic spins.
17. **2013 CLEO:QELS (San Jose, USA):** N. Behbood, F. Martin Ciurana, R. J. Sewell, G. Colangelo, M. Napolitano & M.W. Mitchell, Spin cooling via incoherent feedback in an ensemble of cold ^{87}Rb atoms.
16. **2013 CLEO:QELS (San Jose, USA):** G. Colangelo, N. Behbood, F. Martin Ciurana, G. Puentes, R.J. Sewell & M.W. Mitchell, Generation of planar quantum squeezing in an atomic ensemble.
15. **2013 DAMOP (Quebec, Canada):** R. J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M. W. Mitchell, Simultaneous observation of super-Heisenberg scaling & spin squeezing in a nonlinear measurement of atomic spins.
14. **2013 CLEOE-IQEC (Munich, Germany):** R. J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M. W. Mitchell, Simultaneous observation of super-Heisenberg scaling & spin squeezing in a nonlinear measurement of atomic spins.
13. **2012 QCMC (Vienna, Austria):** F. A. Beduini, N. Behbood, B. Dubost, Y. de Icaza, M. Napolitano, R.J.Sewell, F. Wolfgramm, J. Zielińska, & M.W. Mitchell, Quantum-enhanced magnetometry with photons & atoms.
12. **2012 ICAP (Paris, France):** M. Napolitano, M. Koschorreck, B. Dubost, N. Behbood, R.J. Sewell, & M.W. Mitchell, Interaction-based spin measurements in a cold atomic ensemble.
11. **2012 QIM (Berlin, Germany):** R.J. Sewell, M.Koschorreck, M. Napolitano, B. Dubost, N. Behbood, & M.W. Mitchell, Spin Squeezing of Large-Spin Ensembles via Quantum Non-demolition Measurement.
10. **2012 QIM (Berlin, Germany):** N. Behbood, M. Napolitano, G. Colangelo, B. Dubost, S. Palacios Álvarez, R.J. Sewell, G. Tóth, & M.W. Mitchell Generation of a macroscopic singlet state in an atomic ensemble.
9. **2012 CLEO:QELS (San Jose, USA):** R.J. Sewell, M.Koschorreck, M. Napolitano, B. Dubost, N. Behbood, & M.W. Mitchell, Spin-squeezing of a large-spin system via QND measurement.
8. **2012 CLEO:QELS (San Jose, USA):** N. Behbood, M. Napolitano, G. Colangelo, B. Dubost, S. Palacios Álvarez, R.J. Sewell, G. Tóth, & M.W. Mitchell Generation of a macroscopic singlet state in an atomic ensemble.
7. **2012 YAO (Cracow, Poland):** G. Colangelo, R.J. Sewell, & M.W. Mitchell, The quantum limits of magnetometry in a cold atomic ensemble.
6. **2011 CLEO:QELS (Munich, Germany):** N. Behbood, B. Dubost, M. Napolitano, M. Koschorreck, R.J. Sewell, G. Tóth, & M.W. Mitchell, Generation of macroscopic singlet states in atomic ensembles.
5. **2011 CLEO:QELS (Baltimore, USA):** M. Napolitano, M. Koschorreck, B. Dubost, N. Behbood, R.J. Sewell, & M.W. Mitchell, Interaction-based quantum metrology giving a scaling beyond the Heisenberg limit.
4. **2011 YAO (Hannover, Germany):** N. Behbood, B. Dubost, M. Napolitano, M. Koschorreck, R.J. Sewell, G. Tóth, & M.W. Mitchell, Generation of a macroscopic singlet state in an atomic ensemble.
3. **2010, EMALI (Barcelona, Spain):** R.J. Sewell, M. Koschorreck, M. Napolitano, B.

- Dubost, N. Behbood, & M.W. Mitchell, Quantum Metrology with Ultracold Atoms.
2. **2010, QCMC (Briabane, Australia):** R.J. Sewell, M. Napolitano, M. Koschorreck, B. Dubost, N. Behbood, & M.W. Mitchell, Nonlinear Quantum Metrology of Atomic Spins.
 1. **2010, CLEO:QELS (San Jose, USA):** M. Koschorreck, M. Napolitano, B. Dubost, N. Behbood & R.J. Sewell, and M.W. Mitchell, Spin Squeezing via Quantum Non-Demolition Measurements in Cold ^{87}Rb Atomic Ensemble.

* Presenting author underlined.

POSTERS

15. **2014 Quantum Information Processing (Barcelona, Spain):** R. J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M. W. Mitchell, Ultra-sensitive atomic spin measurements with a nonlinear interferometer.
14. **2014 Quantum Simulators (Barcelona, Spain):** N. Behbood, R. J. Sewell, M. Napolitano, G. Colangelo, F. Martin Ciurana & M. W. Mitchell, Spin cooling via incoherent feedback in an ensemble of cold Rb atoms.
13. **2013 CLEO (Munich, Germany):** P. Hauke, R. J. Sewell, M. W. Mitchell & M. Lewenstein Quantum control of spin-correlations in ultracold lattice gases.
12. **2013 CLEO (Munich, Germany):** N. Behbood, F. Martin Ciurana, R. J. Sewell, G. Colangelo, M. Napolitano & M.W. Mitchell, Spin cooling via incoherent feedback in an ensemble of cold ^{87}Rb atoms.
11. **2013 CLEO (Munich, Germany):** N. Behbood, F. Martin Ciurana, R. J. Sewell, G. Colangelo, M. Napolitano & M.W. Mitchell, Fast & non-destructive vector field magnetometry with cold atomic ensembles.
10. **2012, QCMC (Vienna, Austria):** R.J. Sewell, M. Koschorreck, M. Napolitano, B. Dubost, N. Behbood, G. Colangelo, F. Martin & M.W. Mitchell, Spin squeezing via QND measurement in an Optical Magnetometer.^{\$}
9. **2010, ICAP (Cairns, Australia):** R.J. Sewell, M. Koschorreck, M. Napolitano, B. Dubost, N. Behbood, & M.W. Mitchell, Spin Squeezing in Broadband Atomic Magnetometry.
8. **2010, SQUINT (Santa Fe, USA):** R.J. Sewell, F. Baumgärtner, S. Eriksson, I. Llorente-García, J. Dingjan, J. P. Cotter, & E. A. Hinds, Atom Chip BEC Interferometer.
7. **2009, QuAMP (Leeds, UK):** F. Baumgärtner, R.J. Sewell, S. Eriksson, I. Llorente-García, J. Dingjan, & E. A. Hinds, Atom Chip BEC Interferometer.
6. **2009, EPSRC (London, UK):** R.J. Sewell, F. Baumgärtner, S. Eriksson, I. Llorente-García, J. Dingjan, & E. A. Hinds, Atom Chip BEC Interferometer.
5. **2008, Interf (Triest, Italy):** S. Eriksson, R.J. Sewell, F. Baumgärtner, J. Dingjan, & E. A. Hinds, Single & Double Well Potentials on an Atom Chip.
4. **2007, QuAMP IV (London, UK):** R.J. Sewell, S. Eriksson, J. Dingjan, & E. A. Hinds, Single & Double Well Potentials on an Atom Chip.
3. **2007, PAQ (London, UK):** R.J. Sewell, S. Eriksson, J. Dingjan, & E. A. Hinds, Single & Double Well Potentials on an Atom Chip.
2. **2007, YAO (Durham, UK):** R.J. Sewell, S. Eriksson, J. Dingjan, & E. A. Hinds, Towards an Atom Chip Interferometer.
1. **2006, YAO (Orsay, France):** R.J. Sewell, S. Eriksson, & E. A. Hinds, Towards an Atom Chip Interferometer.

^{\$} Withdrawn.

15. **2014 CLEO:QELS (San Jose, U.S.A.):** R.J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M.W. Mitchell. Certified quantum non-demolition measurement of atomic spins. [CLEO:QELS FTh1B.4 \(2014\)](#).
14. **2014 CLEO:QELS (San Jose, U.S.A.):** N. Behbood, G. Colangelo, F. Martin Ciurana, M. Napolitano, R.J. Sewell & M.W. Mitchell. Spin cooling via incoherent feedback in an ensemble of cold Rb atoms. [CLEO:QELS, FTh3B.7 \(2014\)](#).
13. **2013 CLEO:QELS (San Jose, U.S.A.):** R.J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M.W. Mitchell. Simultaneous observation of super-Heisenberg scaling and spin squeezing in a nonlinear measurement of atomic spins. [CLEO:QELS QTh1L.3 \(2013\)](#).
12. **2013 CLEO:QELS (San Jose, U.S.A.):** P. Hauke, R.J. Sewell, M.W. Mitchell & M. Lewenstein. Quantum control of spin-correlations in ultracold lattice gases. [CLEO:QELS QW3C.3 \(2013\)](#).
11. **2013 CLEO:QELS (San Jose, U.S.A.):** G. Colangelo, N. Behbood, F. Martin Ciurana, G. Puentes, R.J. Sewell & M.W. Mitchell. Generation of planar quantum squeezing in an atomic ensemble. [CLEO:QELS QTh1L.5 \(2013\)](#).
10. **2013 CLEO:QELS (San Jose, U.S.A.):** N. Behbood, F. Martin Ciurana, G. Colangelo, M. Napolitano, R.J. Sewell & M.W. Mitchell. Spin cooling via incoherent feedback in an ensemble of cold Rb atoms. [CLEO:QELS QTh1L.4 \(2013\)](#).
9. **2013 CLEOE-IQEC (Munich, Germany):** N. Behbood, F. Martin Ciurana, G. Colangelo, M. Napolitano, R.J. Sewell & M.W. Mitchell. Spin cooling via incoherent feedback in an ensemble of cold Rb atoms. [CLEOE-IQEC \(2013\)](#).
8. **2013 CLEOE-IQEC (Munich, Germany):** R.J. Sewell, M. Napolitano, N. Behbood, G. Colangelo, F. Martin Ciurana & M.W. Mitchell. Simultaneous observation of super-Heisenberg scaling and spin squeezing in a nonlinear measurement of atomic spins. [CLEOE-IQEC \(2013\)](#).
7. **2013 CLEOE-IQEC (Munich, Germany):** P. Hauke, R.J. Sewell, M.W. Mitchell & M. Lewenstein. Quantum control of spin-correlations in ultracold lattice gases. [CLEOE-IQEC \(2013\)](#).
6. **2013 CLEOE-IQEC (Munich, Germany):** N. Behbood, F. Martin Ciurana, G. Colangelo, M. Napolitano, R.J. Sewell & M.W. Mitchell. Fast and non-destructive vector field magnetometry with cold atomic ensembles. [CLEOE-IQEC \(2013\)](#).
5. **2012 ICAP (Paris, France):** N. Behbood, F. Martin Ciurana, G. Colangelo, M. Napolitano, G. Tóth, **R. J. Sewell**, & M.W. Mitchell. Generation of macroscopic singlet states in a cold atomic ensemble. [EPJ Web of Conferences 57, 03004 \(2013\)](#).
4. **2012 CLEOE-IQEC (Munich, Germany):** R.J. Sewell, M. Koschorreck, M. Napolitano, B. Dubost, N. Behbood & M.W. Mitchell. Spin-squeezing of a large-spin system via QND measurement. [CLEOE-IQEC \(2012\)](#).
3. **2011 CLEO:QELS (San Jose, U.S.A.):** Robert J. Sewell, M. Koschorreck, M. Napolitano, B. Dobust, N. Behbood & M.W. Mitchell. Spin-squeezing of a large-spin system via QND measurement. [CLEO:QELS QF2E.2 \(2011\)](#).
2. **2011 CLEO:QELS (San Jose, U.S.A.):** M. Napolitano, M. Koschorreck, B. Dubost, N. Behbood, Robert J. Sewell & M.W. Mitchell. Interaction-based quantum metrology giving a scaling beyond the Heisenberg limit. [CLEO:QELS QTuJ2 \(2011\)](#).
1. **2010 CLEO:QELS (San Jose, U.S.A.):** M. Koschorreck, M. Napolitano, B. Dubost, N. Behbood, R.J. Sewell & M.W. Mitchell. Spin Squeezing via Quantum Non-Demolition Measurements in Cold ^{87}Rb Atomic Ensemble. [CLEO:QELS QThA4 \(2010\)](#).

LECTURES & SEMINARS

LECTURES

1. **2014, Winter School on Quantum Physics & Quantum Information, (Olomouz University, Czech Republic):** Atomic Physics.

SEMINARS & COLLOQUIA

14. **2014, CFM & DIPC, San Sebastian, Spain:** Strong atom-light interaction for quantum-enhanced sensors.
13. **2014, University College London (U.K.):** Entanglement of atomic spins beyond simple spin squeezing.
12. **2014, Oxford University, (U.K.):** Entanglement of atomic spins beyond simple spin squeezing.
11. **2013, MIT (Boston, USA):** Quantum-enhanced optical magnetometry.
10. **2013, Imperial College, (London, U.K.):** Quantum non-demolition measurement & quantum control of atomic spins.
9. **2013, ICFO (Barcelona, Spain):** Certified quantum non-demolition measurement of ultracold atomic spins.
8. **2012, UPV (Bilbao, Spain):** Squeezing, entanglement & quantum control of atomic spins.
7. **2011, Imperial College London, (London, U.K.):** Nonlinear quantum metrology with atomic spins.
6. **2010, Monash University (Melbourne, Australia):** Spin Squeezing, Entanglement & Nonlinear Quantum Metrology with Ultracold Atoms.
5. **2010, Melbourne University, (Melbourne, Australia):** Spin Squeezing, Entanglement & Nonlinear Quantum Metrology with Ultracold Atoms.
4. **2010, A.N.U. (Canberra, Australia):** Spin Squeezing, Entanglement & Nonlinear Quantum Metrology with Ultracold Atoms.
3. **2009, ICFO (Barcelona, Spain):** Atom-chip BEC interferometer.
2. **2009, I.E.S.L. (Heraklion, Greece):** Atom-chip BEC interferometer.
1. **2007, A.N.U. (Canberra, Australia):** Atom-chip BEC interferometer.

REFERENCES

Prof. Morgan Mitchell	ICFO - The Institute of Photonic Sciences Av. Carl Friedrich Gauss, 3 08860, Castelldefels (Barcelona), Spain. Tel.: +34 935534017 Email: morgan.mitchell@icfo.es
Prof. Ed Hinds	The Blackett Laboratory, Imperial College London Prince Consort Rd, London, SW7 2BW, UK. Tel.: +44 20759 47901 Email: ed.hinds@imperial.ac.uk
Prof. Maciej Lewenstein	The Institute of Photonic Sciences Av. Carl Friedrich Gauss, 3 08860, Castelldefels (Barcelona), Spain. Tel.: +44 935534072 Email: maciej.lewenstein@icfo.es