

Personal details

Date of birth:

06. Sept. 1978, Berlin-Charlottenburg (Germany)

Residence:

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Languages: Native speaker fluency in German and English, intermediate level fluency in French

Research Interests

- My research interests are in the development and implementation of quantum information networks and the utilisation of quantum effects in measurements. Specifically my research is currently geared towards the design and implementation of interconnects between flying qubits (photons) and stationary qubits (ions, atoms, etc) especially for use as memories or processors.
- A further interest lies in fundamental experiments to prove and harness the essence of Quantum Mechanics and as such I am involved in projects aimed at closing loopholes in photonic Bell-tests.

Employment History

Since 08.02.2010	<p>Postdoctoral Research Fellow, Level B / Lecturer In the QT Lab of Prof. Dr. Andrew White</p> <p>Main activities:</p> <ul style="list-style-type: none"> -Design and construction of a narrow band single photon source for quantum memory experiment in collaboration with the group of Ping-Koy Lam at the Australian National University. -Setup, maintenance and operation of photon number resolving transition edge sensors in collaboration with NIST -Teaching of undergraduate Courses and Labs. - Supervision of Undergraduate Students. - Design and operation of experiments to extend and enhance linear optical quantum computing. 	University of Queensland, Brisbane Australia
15.11.2007- 08.02.2010	<p>Post-doctoral Research Fellow, Level A in the Atomic Physics Group of Dr. David Kielpinski</p> <p>Main activities:</p> <ul style="list-style-type: none"> - Operation and maintenance of Yb^+ ion trap and operation and maintenance of frequency stabilised laser systems. - Characterisation and implementation of laser systems for the use in experimental laser cooling of neutral hydrogen. 	Griffith University, Brisbane, Australia

Education

2004-2007	<p>PhD-Degree in Physics (Awarded 2010) in the Quantum Technology Laboratory of Prof. Dr. Andrew White “Stepping stones towards optical quantum computing”.</p>	University of Queensland, Brisbane, Australia
1998-2003	<p>Degree of Physics, Grade 2.0, good (Scale 1.0-6.0) (Diplom Physik, approx. equivalent to a Masters) Majors: Photonics, Quantum Information & Quantum Optics.</p> <p>Diploma thesis: in the photonics group of Prof. Ralf Menzel “Generation of entangled photons through optical parametric down-conversion using femtosecond pulses for a certain quantum cryptography protocol”.</p>	University of Potsdam, Potsdam, Germany

Teaching Experience

- [PHYS3051] Fields in Physics, Semester 1, 2011
- [PHYS2041] Quantum Physics, Laboratory classes, Semester 2, 2010-11
- [PHYS2082] Space Science & Stellar Astrophysics Semester 2, 2010-11
- [PHYS2020] Thermodynamics & Condensed Matter Physics, Laboratory classes, Semester 1, 2010-11
- [PHYS2055] Introduction to Fields in Physics, Laboratory classes, Semester 1, 2010-11
- [COSC2000] Introduction to Computational Biology, Semester 1, 2010
- [BPS2001] Electrodynamics and Optics, Semester 1, 2009.
- 2004-2007 Tutoring various courses and labs (Mechanics, Electromagnetism, Optics and Quantum Physics) for first and second year physics students at the University of Queensland.
- 2000, 2001 and 2003 Tutoring the First year lab classes for science students (Physics, Biology, Chemistry., etc.) at the University of Potsdam.
- Assessment of MSc thesis for students at the University of Queensland.

Community involvement

- Secretary for the Australian Institute of Physics (AIP) QLD branch since Jan 2010 and have recently been re-elected for this role for 2011.
- Active referee for the American Physical Society, having refereed 6 papers since 2009.
- Secretary for the Brisbane German Language School (2010-2011).
- Participant as specialist “Speed dating with a scientist” for the Australian & New Zealand Association for the Advancement of Science (ANZAAS) 2011 Youth ANZAAS-Tour
- Providing science advice and point of views on “Mornings with Madonna King” on 612ABC local radio.

Scholarships and Awards

- Travelling Scholarship through the Wilhelm and Else Herrhausen Foundation (2003).
- School of Physical Sciences PhD-Scholarship (2004-2005).
- University of Queensland Confirmation Scholarship (2005-2007).

Publications

1. M.J. Petrasianus, E.W. Streed, **T.J. Weinhold**, B.G. Norton, D. Kielpinski, “Optogalvanic Spectroscopy of Metastable States in Yb^{+} ”, arXiv:1107.1021v1
2. E.W. Streed, B.G. Norton, A. Jechow, **T.J. Weinhold**, D. Kielpinski, "Imaging of Trapped Ions with a Microfabricated Optic for Quantum Information Processing" Physical Review Letters 106, 010502 (2011) (Impact Factor 7,328), Citations: 0)
3. M. Barbieri, **T.J. Weinhold**, B.P. Lanyon, A. Gilchrist, K.J. Resch, A.G. White, “Parametric down-conversion in linear optical quantum gates: two's company, four's a crowd” J. Mod. Opt **56:2** 209 (2009). (Impact Factor: 0.942, Citations: 1)
4. E.W. Streed, **T.J. Weinhold**, and D. Kielpinski, “Absolute frequency stabilization of a laser to ions in a discharge” App Phys Lett. 93, 071103 (2008). (Impact Factor: 3.554, Citations: 3)
5. **T.J. Weinhold**, A. Gilchrist, K.J. Resch, A.C. Doherty, A.G. White, “Error budgets for quantum logic gates: the road to fault tolerance” arXiv:0808.0794.
6. B.P. Lanyon, **T.J. Weinhold**, N.K. Langford, J.L. O'Brien, K.J. Resch, A. Gilchrist, A.G. White, “Manipulating biphotonic qutrits”, Physical Review Letters **100**, 060504 (2008). (Impact Factor: 7.328, Citations: 25)
7. B.P. Lanyon, **T.J. Weinhold**, N.K. Langford, M. Barbieri, D.F.V James, A. Gilchrist, and A.G. White, “Experimental demonstration of a compiled version of Shor’s algorithm with quantum entanglement”, Physical Review Letters **99**, 250505 (2007). (Impact Factor: 7.328, Citations: 31)
8. K.J. Resch, J.L. O'Brien, **T.J. Weinhold**, K. Sanaka, B.P. Lanyon, N.K. Langford and A.G. White, “Entanglement generation by Fock-state filtration”, Physical Review Letters **98**, 203602 (2007). (Impact Factor: 7.328, Citations: 10)

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9. N. K. Langford, **T. J. Weinhold**, R. Prevedel, K. J. Resch, A. Gilchrist, J. L. O'Brien, G. J. Pryde, A. G. White, "Demonstration of a simple entangling optical gate and its use in Bell-state analysis" *Physical Review Letters* **95**, 210504 (2005). (Impact Factor: 7.328, Citations: 59)
10. R. Gerhard-Multhaupt, W. Künstler, T. Görne, A. Pucher, **T. Weinhold**, M. Seiß, Z. Xia, A. Wedel, R. Danz, „Porous PTFE Space-Charge Electrets for Piezoelectric Applications“, *IEEE Transaction on Dielectrics and Electrical Insulation* **7**, 480 (2000). (Impact Factor: 0.848, Citations: 45)
11. W. Künstler, Z. Xia, **T. Weinhold**, A. Pucher, R. Gerhard-Multhaupt, „Piezoelectricity of porous polytetrafluoroethylene single- and multiple-film electrets containing high charge densities of both polarities“, *Applied Physics A* **70**, 5 (2000). (Impact Factor: 1.595, Citations: 38)

Conference Presentations

- **T. J. Weinhold**, A. Gilchrist, K. J. Resch, A. C. Doherty, J. L. O'Brien, G. J. Pryde, A. G. White, "Measuring the fault-tolerance of an experimental optical quantum gate", Poster presentation at QCMC Conference in Calgary, Canada (Aug. 2008.)
- **T. J. Weinhold**, E. W. Streed, D. Kielpinski, "Absolute frequency stabilisation of a laser to ions in a discharge", Poster presentation at ICAP conference in Storrs, USA (Aug. 2008.)
- **T. J. Weinhold**, E. W. Streed, D. Kielpinski, "Absolute frequency stabilisation of a laser to ions in a discharge", Poster presentation at ICAP conference in Storrs, USA (Jul. 2008).
- **T. J. Weinhold**, E. W. Streed, D. Kielpinski, "Absolute frequency stabilisation of a laser to ions in a discharge", Presentation at the ICO21 conference in Sydney, Australia (Jul 2008).
- **T. J. Weinhold**, A. Gilchrist, K. J. Resch, A. C. Doherty, J. L. O'Brien, G. J. Pryde, A. G. White, "Measuring the fault-tolerance of an experimental optical quantum gate", Presented at the ICO21 conference in Sydney, Australia (Jul 2008).
- **T. J. Weinhold**, Kevin J. Resch, G. J. Pryde, J. L. O'Brien, A.G. White, "Independent photons in optical quantum technologies", Presented at the AIP-Conference in Brisbane, Australia (Dec. 2006).
- **T. J. Weinhold**, Kevin J. Resch, J. L. O'Brien, G. J. Pryde, A.G. White, "The good and the bad of double-pair down-conversion in quantum information", Poster presentation at the QCMC-Conference in Tsukuba, Japan (Dec. 2006).
- Participated as one of only a handful of PhD students at the Presentation by invitation only LOQUIP-Workshop in Baton Rouge, USA (Apr. 2006).
- **T. J. Weinhold**, J. L. O'Brien, G. J. Pryde, Kevin J. Resch, A.G. White, "Multi-qubit circuits with a simplified entangling gate", Poster presentation at the ACOLS-Conference in Rotorua, New Zealand (Dec. 2005).
- **T. J. Weinhold**, G. J. Pryde, J. L. O'Brien, A.G. White, "Small quantum circuits for optical quantum computing", Poster presentation at the AIP-Conference in Canberra (Jan. 2005).
- **T. J. Weinhold**, G. J. Pryde, J. L. O'Brien, A.G. White, "Quantum information with pulsed photons", Poster presentation at the AOS-Conference in Canberra (July 2004).
- **T. Weinhold**, M. Ostermeyer, R. Menzel. "Optical parametric down-conversion for the realization of a certain quantum cryptography protocol", Presented during the DPG-Meeting in Hanover, Germany (Mar. 2003).
- **T. Weinhold**, M. Seiß, W. Künstler, T. Görne, R. Gerhard-Multhaupt, „Porous Polytetrafluoroethylene (PTFE) single-film space-charge electrets with high piezoelectric coefficients“, *IEE Dielectric Materials, Measurements and Application*, Conference Publication No. 473, pp. 380-385, 2000, Presented during the IEE Meeting in Edinburgh (Sep. 2000).

Invited Presentations

- **T. J. Weinhold**, M. G. Pullen, E. W. Streed, D. Kielpinski, "Laser cooling atomic Hydrogen" Presented at the IQOQI in Innsbruck, Austria (Mar 2009).

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Professional Referees

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