

Dr. Philip Walther

Date of birth: May 12, 1978 in Vienna, Austria
Address: Faculty of Physics, University of Vienna, Boltzmanngasse 5, 1090 Vienna, Austria
Contact: philip.walther@univie.ac.at,
<http://homepage.univie.ac.at/philip.walther>
www.quantum.at

Current position

Since 2008 Assistant Professor (Universitätsassistent),
Quantum Optics, Quantum Nanophysics and Quantum Information
Faculty of Physics, University of Vienna
Working on photonic quantum computation and quantum simulation

Professional Career

2005 – 2008 Postdoctoral researcher in the group of Prof. Mikhail Lukin
Department of Physics, Harvard University
Working on quantum repeaters using atomic ensembles as quantum memory

2005 Senior scientist for project linear-optical-quantum-computation
Institute of Experimental Physics, University of Vienna, Austria
Working on optical quantum computing using cluster states

2004 Supervision of ERANET within project ERA-pilot QIST,
Institute for Quantum Optics and Quantum Information, Austrian Academy of Sciences
Providing assistance in structuring an European Network for QIST

Education

2005 PhD in Physics (with distinction), University of Vienna, Austria; Advisor: A. Zeilinger
Experimental demonstration of the first one-way quantum computation and several other novel quantum states for future quantum technologies

1998 MSc in Chemistry (with distinction and below minimum study duration),
Vienna University of Technology, Austria; Advisor: K. Schwarz
Ab-initio calculations of Oxozirconium Nanoclusters

Awards & Distinctions

2011 Vienna Funding Award in Science (Förderungspreis der Stadt Wien)

2011 START Price of the Austrian Science Fund (FWF)

2011 Fresnel Price of the European Physical Society (EPS)

2009 Executive member of The German Young Academy

2007 Elected as a member of The German Young Academy at the Berlin-Brandenburg Academy of Sciences and the German Academy of Natural Scientists Leopoldina

2007 Among top 30 young Austrian scientists by the Austrian magazine *Heureka*

2006 Prize for outstanding academic performance, University of Vienna

2005 Loschmidt-prize of the Chemical-Physical Society of Vienna

2004 Two experiments were selected by the International Institute of Physics (IOP) as one of the Top Ten Physics Highlights in 2004

2002 Prize for outstanding academic performance, University of Vienna

2001 Scholarship from the State Lower Austria

Professional Membership

American Physical Society, European Physical Society, Chemical-Physical Society

Review of Papers and Research Proposals

Paper refereeing: Nature, Nature Physics, Nature Photon., Nature Commun., Sci. Rep., Proc. Natl. Acad. Sci. USA., Phys. Rev. Lett., Phys. Rev. A, New. J. Phys, J. Opt. Soc. Am. B, Found. Phys, Quant. Inf. Proc, etc.

Reviewer for: Team Programme, Foundation for Polish Science (2010);
National Priorities Research Program, Qatar National Research Fund (2011)

Organization of Scientific Conferences, Workshops and Public Talks

International conferences: Seminar series Center for Ultracold atoms (CUA), MIT and Harvard University (organizational input) for fall term (2007);
Workshop der AG Grenzen der Quantentheorie zum Thema der Jungen Akademie “Frontiers of Quantum Theory: Reality and Randomness“, Harnack-Haus, Berlin, Germany (2008);
Workshop on Quantum Coherence & Entanglement on Macroscopic Scale by the study group “Frontiers of Science” within The German Young Academy, Tenerife, Spain (2010);

National conferences: SFB-FoQuS Meeting, Faculty of Physics, University of Vienna (2009); (local organizer) 2nd Vienna Symposium on the Foundations of Modern Physics, Faculty of Physics, University of Vienna (2009);
SFB-FoQuS Meeting, Faculty of Physics, University of Vienna (2010)

Institutional engagement: Public lecture to pupils: Lycée Francais and Vienna Children’s University(2005);
Public panelist, at the 7th Faculty of the Karl-Franzens University Graz (2010)

Selected Publications

1. X.S. Ma, B. Dakic, W. Naylor, A. Zeilinger, P. Walther
Quantum simulation of a frustrated Heisenberg spin system
Nature Physics 7, 399 (2011).
2. S. Barz, G. Cronenberg, A. Zeilinger, P. Walther
Heralded generation of entangled photon pairs
Nature Photonics 4, 553 (2010).
3. R. Prevedel, P. Walther, F. Tiefenbacher, P. Böhi, R. Kaltenbaek, T. Jennewein, A. Zeilinger
High-speed linear optics quantum computing using active feed-forward
Nature 445, 65 (2007).
4. P. Walther, K. Resch, T. Rudolph, E. Schenck, H. Weinfurter, V. Vedral, M. Aspelmeyer, A. Zeilinger
Experimental One-Way Quantum Computing
Nature 434, 169 (2005).
5. P. Walther, J.-W. Pan, M. Aspelmeyer, R. Ursin, S. Gasparoni, A. Zeilinger
De Broglie Wavelength of a Nonlocal Four-Photon state
Nature 429, 158 (2004).
6. R. Ursin, T. Jennewein, M. Aspelmeyer, R. Kaltenbaek, M. Lindenthal, P. Walther, A. Zeilinger,
Quantum teleportation across the Danube
Nature 430, 849 (2004).
7. M. Aspelmeyer H.R. Böhm, T. Gyatso, T. Jennewein, R. Kaltenbaek, M. Lindenthal, G. Molina-Terriza, A. Poppe, K. Resch, M. Taraba, R. Ursin, P. Walther, A. Zeilinger.
Long-Distance Free-Space Distribution of Quantum Entanglement
Science 301, 621 (2003).