

## LIST OF PUBLICATIONS

### Books

1. P. Walther (2002). Diploma-Thesis:  
*Ab Initio Molecular Dynamics Applied to Oxo-zirconium Nanoparticles.*
2. P. Walther (2005). PhD-Thesis:  
*Entanglement and Nonlocality in Multi-Photon Systems.*

### Publications in refereed journals

1. M. Aspelmeyer, H.R. Böhm, T. Giatso, 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).
2. 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).
3. S. Gasparoni, J.-W. Pan, P. Walther, T. Rudolph and A. Zeilinger,  
*Realization of a Photonic Controlled-NOT Gate Sufficient for Quantum Computation*  
**Physical Review Letters** 92, 020504 (2004).
4. R. Ursin, T. Jennewein, M. Aspelmeyer, R. Kaltenbaek, M. Lindenthal, P. Walther and A. Zeilinger,  
*Quantum teleportation across the Danube*  
**Nature** 430, 849 (2004).
5. P. Walther, K. J. Resch, Č. Brukner, A.M. Steinberg, J.-W. Pan, A. Zeilinger,  
*Quantum nonlocality obtained from local states by entanglement purification*  
**Physical Review Letters** 94, 040504 (2005).
6. K.J. Resch, M. Lindenthal, B. Blauensteiner, H.R. Böhm, A. Fedrizzi, A. Poppe, T. Schmidtt-Manderbach, M. Taraba, R. Ursin, P. Walther, H. Weier, H. Weinfurter, A. Zeilinger,  
*Distributing entanglement and single photons through an intra-city, free-space quantum channel*  
**Optics Express** 13, 202 (2005).
7. K.J. Resch, P. Walther, A. Zeilinger,  
*Full characterization of a three-photon GHZ state using quantum state tomography*  
**Physical Review Letters** 94, 070402 (2005).
8. P. Walther, K.J. Resch, A. Zeilinger,  
*Local conversion of GHZ states to approximate W states*  
**Physical Review Letters** 94, 2410501(2005).
9. P. Walther, A. Zeilinger,  
*Experimental Realization of a photonic Bell-state analyzer*  
**Physical Review A** 72, 010302(R) (2005).
10. P. Walther, K.J. Resch, T. Rudolph, E. Schenck, H. Weinfurter, V. Vedral, M. Aspelmeyer, A. Zeilinger,  
*Experimental One-Way Quantum Computing*  
**Nature** 434, 169 (2005).
11. P. Walther, M. Aspelmeyer, K. Resch, A. Zeilinger,  
*Experimental violation of a cluster state Bell inequality*  
**Physical Review Letters** 95, 020403 (2005).

12. P. Walther, K. Resch, Č. Brukner, A. Zeilinger,  
*Experimental Entangled Entanglement*  
**Physical Review Letters** 97, 020501 (2006).
13. P. Walther, M. Aspelmeyer, A. Zeilinger,  
*Heralded generation of multi-photon entanglement*  
**Physical Review A** 75, 021313 (2007).
14. 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).
15. P. Walther, M.D. Eisaman, A. André, F. Massou, M. Fleischhauer, A.S. Zibrov, M.D. Lukin,  
*Generation of Narrow-Bandwidth Single Photons using Electromagnetically Induced Transparency in Atomic Ensembles*  
**International Journal of Quantum Information** 5, 51 (2007).
16. R. Prevedel, A. Stefanov, P. Walther, A. Zeilinger,  
*Experimental realization of a quantum game on a one-way quantum computer*  
**New Journal of Physics** 9, 205 (2007)
17. P. Walther, M. Puchberger, F. R. Kogler, K. Schwarz, U. Schubert,  
*Ligand dynamics on the surface of zirconium oxo clusters*  
**Physical Chemistry Chemical Physics** 11, 3640 (2009)
18. R. Prevedel, G. Cronenberg, M.S. Tame, M. Paternostro, P. Walther, M.S. Kim, A. Zeilinger  
*Experimental Realization of Dicke States of up to Six Qubits for Multiparty Quantum Networking*  
**Physical Review Letters** 103, 020503 (2009)
19. S. Barz, G. Cronenberg, A. Zeilinger, P. Walther,  
*Heralded generation of entangled photon pairs*  
**Nature Photonics** 4, 553 (2010)
20. X.S. Ma, B. Dakic, W. Naylor, A. Zeilinger, P. Walther,  
*Quantum simulation of a frustrated Heisenberg spin system*  
**Nature Physics** 7, 399 (2011)
21. S. Barz, E. Kashefi, A. Broadbent, J. Fitzsimons, A. Zeilinger, P. Walther,  
*Demonstration of blind quantum computing*  
**Science** 335, 303 (2012)
22. A. Aspuru-Guzik, P. Walther,  
*Review article on photonic quantum simulators*  
**Nature Physics** 8, 285 (2012)
23. X.S. Ma, B. Dakic, P. Walther,  
*Photonic toolbox for quantum simulation*  
**Adv. Chem. Phys.** (in press).

#### **Non-Peer-Reviewed Journal Articles**

24. P. Walther,  
*Spooky Teleportation*  
**Nature Physics** 2, 655 (2006).
25. S. Barz, P. Walther,  
*Beating the classical camera*  
**Nature Photonics** 4, 199 (2010).

### Publications under review, or in preparation

26. B. Dakic, Y.-O. Lipp, X.S. Ma, M. Ringbauer, S. Kropatschek, S. Barz, T. Paterek, V. Vedral, A. Zeilinger, C. Brukner, P. Walther,  
*Quantum discord as optimal resource for quantum communication*  
(under review)
27. X.S. Ma, B. Dakic, S. Kropatschek, W. Naylor, Y.-H. Chan, Z.-X. Gong, L.-M. Duan, A. Zeilinger, P. Walther,  
*Photonic quantum simulation of ground state configurations of Heisenberg square and checkerboard lattice spin systems*  
(under review)

### Other journal contributions

1. M. Aspelmeyer, T. Jennewein, H. R. Böhm, C. Brukner, R. Kaltenbaek, M. Lindenthal, G. Molina-Terriza, J. Petschinka, R. Ursin, P. Walther and A. Zeilinger and M. Pfennigbauer and W. R. Leeb,  
*Quantum Communications in Space*, Tech. Rep. under contract 16358/02, ESA (2003).
2. M. Arndt, M. Aspelmeyer, H. J. Bernstein, R. Bertlmann, C. Brukner, J. P. Dowling, J. Eisert, A. Ekert, C. A. Fuchs, D. M. Greenberger, M. A. Horne, T. Jennewein, P. G. Kwiat, N. D. Mermin, J.-W. Pan, E. M. Rasel, H. Rauch, T. G. Rudolph, C. Salomon, A. V. Sergienko, J. Schmiedmayer, C. Simon, V. Vedral, P. Walther, G. Weihs, P. Zoller, M. Zukowski; Quantum Physics of Nature (QUPON) Conference, Vienna (2005),  
*Quantum Physics from A to Z*, arXiv:quant-ph/0505187v4

### Publications in proceedings

1. M. Aspelmeyer, P. Walther, T. Jennewein and A. Zeilinger,  
*Nonlocal Photon Number States for Quantum Metrology*  
Quantum Communications and Quantum Imaging II, R. Meyers and Y. Shih (eds.)  
**Proc. SPIE** Vol. 5551, 15-20 (2004).
2. P. Walther, M.D. Eisaman, A. Némoroski, A. Gorshkov, A.S. Zibrov, A. Zeilinger, M.D. Lukin,  
*Multi-photon entanglement: From quantum curiosity to quantum computing and quantum repeaters*  
**Proc. SPIE** Vol. 6664, 66640G (2007).
3. S. Barz, X.-S. Ma, B. Dakic, A. Zeilinger, P. Walther,  
*Experimental photonic state engineering and quantum control of two optical qubits*  
Quantum Communication, Measurement and Computing (QCMC), T. Ralph and P.-K. Lam (eds.),  
**AIP Conference Proceedings Series**, Vol. 1363, 13-16 (2011).
4. P. Walther,  
*Entanglement as an Element-of-Reality*  
Proceeding of the Max Planck Research Library for the History and Development of Knowledge:  
Decoherence and No-Signalling: Current Interpretational Problems of Quantum Theory (in press).

### Publications in editions and collections

1. P. Walther, A. Zeilinger  
*Quantum Logics based on Four Photon Entanglement.*  
Decoherence, Entanglement and Information Protection in Complex Quantum Systems, V. M. Akulin, A. Sarfati, G. Kurizki and S. Pellegrin (eds.): **Springer**, 49-62 (2005).
2. P. Walther, A. Zeilinger,  
*Quantum Entanglement, Purification, and linear-optics quantum gates with photonic qubits*  
QP-PQ Quantum Probability and White Noise Analysis Vol. 19, Quantum Information and Computing, L. Accardi, M. Ohya and N. Watanabe (eds.): **World Scientific**, 360-369 (2006).
3. M. Aspelmeyer, H. Böhm, A. Fedrizzi, S. Gasparoni, T. Jennewein, G. Molina-Terriza, A. Poppe, K. Resch, R. Ursin, P. Walther, A. Zeilinger,  
*Advanced Quantum Communication Experiments with Entangled Photons*  
Book Dekker, Special Volume on Quantum Communications and Cryptography, A.V. Sergienko (eds.): **Taylor & Francis group**, New York, 45-81 (2006).
5. P. Walther,  
*Wie wirklich ist die Wirklichkeit?*  
Das naturwissenschaftliche Weltbild am Beginn des 21. Jahrhunderts, Series of the Karl Popper Foundation Klagenfurt, B. Kanitscheider, R. Neck (eds.): **Peter Lang Verlag**, Vol. 6, 123-128 (2011).
6. S. Barz, G. Cronenberg, P. Walther,  
*Experimental engineering of photonic quantum entanglement*  
**Photonics**, M. Fadhali (eds.), InTech Open Access Publisher.
7. P. Walther,  
*Nur die Neugier zählt!—Wie sonst käme ein Chemiker zur Quantenphysik?*  
Lehrfibel der Jungen Akademie, Deutschland (in press).

### Miscellaneous Publications

1. P. Walther, A. Nemiroski, A. Gorshkov, A.S. Zibrov, M.D. Lukin,  
*Quantum memory for long-distance and multiphoton entanglement*  
**SPIE Newsroom** DOI:10.1117/2.1200803.1072 (2008).
2. P. Walther,  
*Quantum Simulation with Light: Frustrations between Photon Pairs*  
contribution to popular website **2physics.com** (2011).