

2009

## Articles

- M. Chwalla, J. Benhelm, K. Kim, G. Kirchmair, T. Monz, M. Riebe, P. Schindler, A. S. Villar, W. Hänsel, C. F. Roos, R. Blatt, M. Abgrall, G. Santarelli, G. D. Rovera, Ph. Laurent, *Absolute frequency measurement of the  $40\text{Ca}^+ 4s\ 2S_{1/2} - 3d\ 2D_{5/2}$  clock transition*, Phys. Rev. Lett. 102, 023002 (2009)
- S. Gerber, D. Rotter, M. Hennrich, R. Blatt, F. Rohde, C. Schuck, M. Almendros, R. Gehr, F. Dubin, J. eschner, *Quantum interference from remotely trapped ions*, New J. Phys. 11, 013032 (2009)
- G. Kirchmair, J. Benhelm, F. Zähringer, R. Gerritsma, C. F. Roos, R. Blatt, *Deterministic entanglement of ions in thermal states of motion*, New J. Phys. 11, 023002 (2009)
- T. Monz, K. Kim, W. Hänsel, M. Riebe, A. S. Villar, P. Schindler, M. Chwalla, M. Hennrich, R. Blatt, *Realization of the quantum Toffoli gate with trapped ions*, Phys. Rev. Lett. 102, 040501 (2009)

## Invited Talks

- R. Blatt, *Fighting Decoherence: Quantum Information Science with Trapped Ca+ Ions*, Dutch Physics@FOM Veldhoven 2009 (Veldhoven, Netherlands, 20.01.2009) (2009)

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## Articles

- J. Benhelm, G. Kirchmair, C. F. Roos, R. Blatt, *Experimental quantum information processing with  $43\text{Ca}^+$  ions*, Phys. Rev. A 77, 062306 (2008)
- J. Benhelm, G. Kirchmair, C. F. Roos, R. Blatt, *Towards fault-tolerant quantum computing with trapped ions*, Nature Physics 4, 463 (2008)
- R. Blatt, D. J. Wineland, *Entangled states of trapped atomic ions*, Nature 453, 1008 (2008)
- T. Calarco, M. Aspelmeyer, D. Binosi, R. Blatt, A. Zeilinger, E. S. Polzik, *A quantum leap in computing power*, Public Service Review: European Union 15, 438-439 (2008)
- R. Gerritsma, G. Kirchmair, F. Zähringer, J. Benhelm, R. Blatt, C. F. Roos, *Precision measurement of the branching fractions of the  $4p\ 2P_{3/2}$  decay of Ca II*, Eur. Phys. J. D 50, 13 (2008)
- H. Häffner, C. F. Roos, R. Blatt, *Quantum computing with trapped ions*, Physics Reports 469, 155-203 (2008)
- K. Kim, C. F. Roos, L. Aolita, H. Häffner, V. Nebendahl, R. Blatt, *Geometric phase gate on an optical transition for ion trap quantum computation*, Phys. Rev. A 77, 050303(R) (2008)
- M. Riebe, T. Monz, A. S. Villar, P. Schindler, M. Chwalla, M. Hennrich, R. Blatt, *Deterministic entanglement swapping with an ion trap quantum computer*, Nature Physics 4, 839 (2008)
- C. F. Roos, T. Monz, K. Kim, M. Riebe, H. Häffner, D. F.V. James, R. Blatt, *Nonlinear coupling of continuous variables at the single quantum level*, Phys. Rev. A 77, 040302(R) (2008)
- D. Rotter, M. Mukherjee, F. Dubin, R. Blatt, *Monitoring a single ion's motion via second-order photon correlations*, New J. Phys. 10, 043011 (2008)

## Bookitems

- H. Häffner, W. Hänsel, C. F. Roos, P. O. Schmidt, M. Riebe, M. Chwalla, D. Chek-al-kar, J. Benhelm, U. D. Rapol, T. Körber, C. Becher, O. Gühne, W. Dür, R. Blatt, *Quantum Computing with Trapped Ions*, Controllable Quantum States (Eds.: J. Nitta, H. Nakano) (2008)

## Colloquiums

- R. Blatt, *Quantenoptik und Quanteninformation: Topaktuelle Forschung mit Diodenlasern*, 10-Jahres-Feier Fa. TOPTICA (München, Germany, 17.4.2008) (2008)
- R. Blatt, *Quantenoptik und Quantenkryptologie-Beiträge zur Entwicklung von Sicherheit*, Symposium der Wissenschaftskommission beim BMLV (Hotel Panhans Semmering, NÖ, 12.11.2008) (2008)
- R. Blatt, *Quantum Computer-dream and realization*, One year IMPRS-QD Symposium (Heidelberg, Germany, 30.10.2008) (2008)
- R. Blatt, *Quantum computer - dream and realization*, LENS - European Laboratory for Non-Linear-Spectroscopy (Florenz, Italy, 11.4.2008) (2008)

## Invited Talks

- R. Blatt, *Measurement of the absolute transition frequency of the  $S_{1/2}-D_{5/2}$  transition in  $40\text{Ca}^+$  and  $43\text{Ca}^+$* , 7th Symposium on Frequency Standards and Metrology (Pacific Grove, California, USA, 7.10.2008) (2008)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, Physikalisches Kolloquium, Johannes Gutenberg Universität Mainz (Mainz, Germany, 3.6.2008) (2008)
- R. Blatt, *Quantum Information Science with Trapped Ca+ Ions*, Open Quantum Systems: Decoherence and Control (Cambridge, MA, USA, 21.11.2008) (2008)
- R. Blatt, *Quantum Information Science with Trapped Ca+ Ions*, Quantum Optics IV (Florianopolis, Brasilien, 16.10.2008) (2008)

- R. Blatt, *Quantum Information Science with Trapped Ca<sup>+</sup> Ions*, Workshop "Frontiers of Quantum Theory: Reality and Randomness", Die Junge Akademie Berlin (Berlin, Germany, 28.-30.4.2008) (2008)
- R. Blatt, *Quantum information science with trapped ions*, Young Researchers Meeting - EMALI (Wien, Austria, 21.-25.5.2008) (2008)
- R. Blatt, *The QIPC Strategic Report, App. on Quantum Information Technologies*, QIPC Cluster Review Conference, Institut Henri Poincare (Paris, France, 5.3.2008) (2008)

#### Proceedings

- R. Blatt, *The Quantum Revolution - Towards a new generation of Supercomputers*, Laser Spectroscopy: Proceedings of the XVIII International Conference (ICOLS), 207 (2008)
- C. F. Roos, M. Chwalla, T. Monz, P. Schindler, K. Kim, M. Riebe, R. Blatt, *Quantum information processing and Ramsey spectroscopy with trapped ions*, Laser Spectroscopy: Proceedings of the XVIII International Conference (ICOLS), 53 (2008)

#### Seminar Talks

- R. Blatt, *Quantencomputer - Traum und Realisierung*, Faszination Forschung (Bozen, Italien, 28.11.2008) (2008)

#### Talks

- J. Benhelm, G. Kirchmair, C. F. Roos, R. Blatt, *Towards faulttolerant quantum computing with trapped ions*, Talk (Darmstadt, Germany, in Verhandl. DPG (VI) vol. 43, 03/2008) (2008)
- R. Blatt, *Entanglement, Quantum State Manipulation and Quantum Metrology with Trapped Ca<sup>+</sup> Ions*, Workshop on Quantum Phenomena and Information: From Atomic to Mesoscopic Systems, The Abdus Salam International Centre for Theoretical Physics (Triest, Italy, 5.-16.5.2008) (2008)
- R. Blatt, *Quantum Information Processing with Trapped Ca<sup>+</sup> Ions*, Conference on Ultracold NanoMatter (Toronto, Canada, 14.-16.2.2008) (2008)
- R. Blatt, *Quantum information processing with trapped <sup>43</sup>Ca<sup>+</sup> ions*, Quantum computation and algorithm review meeting (Atlanta, USA, 11-15.8.2008) (2008)
- M. Chwalla, K. Kim, G. Kirchmair, M. Riebe, T. Monz, P. Schindler, A. Villar, C. F. Roos, W. Hänsel, R. Blatt, M. Abgrall, D. Rovera, P. Laurent, *Absolute frequency measurement of the  $4s\ 2S_{1/2} - 3d\ 2D_{5/2}$  clock transition of a single <sup>40</sup>Ca<sup>+</sup> in a Paul trap*, Talk (Darmstadt, Germany, in Verhandl. DPG (VI) vol. 43, 03/2008) (2008)
- K. Kim, T. Monz, A. Villar, P. Schindler, M. Chwalla, M. Riebe, M. Hennrich, W. Hänsel, R. Blatt, *Realization of decoherence-free ion trap quantum computation*, Talk (Darmstadt, Germany, in Verhandl. DPG (VI) vol. 43, 03/2008) (2008)
- G. Kirchmair, J. Benhelm, R. Gerritsma, F. Zähringer, C. Roos, R. Blatt, *Experimental techniques for quantum information processing with trapped <sup>43</sup>Ca<sup>+</sup> ions*, Talk (Darmstadt, Germany, in Verhandl. DPG (VI) vol. 43, 03/2008) (2008)
- T. Monz, K. Kim, W. Hänsel, A. Villar, P. Schindler, M. Riebe, M. Hennrich, R. Blatt, *Three-qubit Toffoli gate with trapped ions*, Talk (Darmstadt, Germany, in Verhandl. DPG (VI) vol. 43, 03/2008) (2008)
- M. Riebe, T. Monz, K. Kim, A. Villar, P. Schindler, M. Hennrich, R. Blatt, *Deterministic Entanglement Swapping with Trapped Ions*, Talk (Darmstadt, Germany, in Verhandl. DPG (VI) vol. 43, 03/2008) (2008)

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##### Articles

- J. Benhelm, G. Kirchmair, U. D. Rapol, T. Körber, C. F. Roos, R. Blatt, *Measurement of the hyperfine structure of the  $S_{1/2}-D_{5/2}$  transition in <sup>43</sup>Ca<sup>+</sup>*, Phys. Rev. A 75, 032506 (2007)
- M. Chwalla, K. Kim, T. Monz, P. Schindler, M. Riebe, C. F. Roos, R. Blatt, *Precision spectroscopy with two correlated atoms*, Appl. Phys. B 89, 483 (2007)
- F. Dubin, D. Rotter, M. Mukherjee, S. Gerber, R. Blatt, *Single-ion two-photon source*, Physical Review Letters 99, 183001 (2007)
- F. Dubin, D. Rotter, M. Mukherjee, C. Russo, J. Eschner, R. Blatt, *Photon Correlation versus Interference of Single-Atom Fluorescence in a Half-Cavity*, Phys. Rev. Lett. 98, 183003 (2007)
- M. Riebe, M. Chwalla, J. Benhelm, H. Häffner, W. Hänsel, C. F. Roos, R. Blatt, *Quantum teleportation with atoms: quantum process tomography*, New J. Phys. 9, 211 (2007)
- M. Schulz, H. Crepez, F. Schmidt-Kaler, J. Eschner, R. Blatt, *Transfer of trapped atoms between two optical tweezer potentials*, J. Mod. Opt. 54, 1619 (2007)
- C. Wunderlich, T. Hannemann, T. Körber, H. Häffner, C. F. Roos, W. Hänsel, R. Blatt, F. Schmidt-Kaler, *Robust state preparation of a single trapped ion by adiabatic passage*, J. Mod. Opt. 54, 1541 (2007)

##### Colloquiums

- R. Blatt, *An atom, a photon and a mirror - simple interference experiments*, Colloquium (FOM-Institute AMOLF, Amsterdam, The Netherlands, 15.2.2007) (2007)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, Colloquium (FHS Kufstein, Austria, 18.1.2007) (2007)
- R. Blatt, *Quanteninformation und Metrologie*, Colloquium (TU Braunschweig, Germany, 24.4.2007) (2007)
- R. Blatt, *The quantum way of doing computations*, Universität Innsbruck, Informatik-Kolloquium (Innsbruck, Austria, 21.6.2007) (2007)
- R. Blatt, *Vom Quantensprung zum Quantencomputer*, Colloquium (Universität Hamburg, Germany, 6.6.2007) (2007)

### Invited Talks

- R. Blatt, *Ca+ clock and application of quantum information techniques to clocks*, Workshop on an Optical Clock Mission in ESA's Cosmic Vision Program (Düsseldorf, Germany, 8.-9.3. 2007) (2007)
- R. Blatt, *Elementary Quantum Algorithms*, SCALA review meeting (Oxford, UK, 28.2.2007) (2007)
- R. Blatt, *QIPC FET Proactive Initiative - shaping FET*, European Commission, Brussels, Belgium (Brussels, 21.9.2007) (2007)
- R. Blatt, *QIPC and other Quantum Information Technologies*, European Commission - "Information Society and Media" (Directorate General, 25, avenue de Beaulieu, Brussels, Belgium, 6.12. 2007) (2007)
- R. Blatt, *Quantum Computation and Quantum Information*, Mexican Summer School (Monterrey Institute of Technology and the University of Leeds, Mexico, 16.-20.7.2007) (2007)
- R. Blatt, *Quantum Information Processing with Trapped  $43\text{Ca}^+$  Ions*, ARO funding meeting (Minneapolis, Mn, USA, 18.8.2007) (2007)
- R. Blatt, *Quantum Information Processing with Trapped  $\text{Ca}^+$  Ions*, ITAMP workshop on Hybrid Approaches to Scalable Quantum Information Systems (Cambridge, Massachusetts, USA, 24.-26.5. 2007) (2007)
- R. Blatt, *Quantum Information Processing with Trapped  $\text{Ca}^+$  Ions*, Conference on Quantum Information processing and Communication (Barcelona, Spain, 15.-19.10.2007) (2007)
- R. Blatt, *Quantum Information Processing with Trapped  $\text{Ca}^+$  Ions - Multi-Particle Entanglement and Quantum Metrology*, International Conference on Quantum Information (Rochester, New York, 10.-15.6. 2007) (2007)
- R. Blatt, *Quantum Information Processing with Trapped  $\text{Ca}^+$  Ions - Multi-Particle Entanglement and Quantum Metrology*, 9th European Conference on Atoms, Molecules & Photons (Grete, Greece, 6.-11.5. 2007) (2007)
- R. Blatt, *Quantum Information Processing with Trapped Ions*, Summer School, DPG Physics School 2007, Conference on Quantum Information and Quantum Simulation (Bad Honnef, Germany, 16.-21.9.2007) (2007)
- R. Blatt, *Quantum Information Science*, Gordon Research Conference, Discussion Leader "Quantum Information Science with Trapped Ions" (Il Cioccio, Barga, Italy, 15.-20.4. 2007) (2007)
- R. Blatt, *Quantum Information and Quantum Metrology with Trapped Ions*, QIPC meeting (Oxford, UK, 28.2.2007) (2007)
- R. Blatt, *Quantum computers - Dream and Realization*, The 7th Swiss Biennial on Science Technics + Aesthetics (Luzern, Switzerland, 20.-21.1. 2007) (2007)
- R. Blatt, *The ERA pilot project*, QIST meeting (Oxford, UK, 28.2.2007) (2007)
- R. Blatt, *The quantum way of doing computations*, AURORA 2007 Conference on Scientific Computing (Vienna, Austria, 18.-20.6. 2007) (2007)

### Seminar Talks

- R. Blatt, *Quantencomputer - Traum und Realisierung*, Kolping Vortrag für die allgemeine Öffentlichkeit (Idar-Oberstein, Germany, 3.4.2007) (2007)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, Vortrag für die allgemeine Öffentlichkeit, Firma Mils Electronics (Mils, Tirol, Austria, 31.5.2007) (2007)
- R. Blatt, *The quantum way of doing computations*, Seminar The Role of Computer Science in Science (DERI Innsbruck, Austria, 12.2.2007) (2007)

### 2006

#### Preprints

- F. Dubin, D. Rotter, M. Mukherjee, C. Russo, J. Eschner, R. Blatt, *Photon correlation vs interference of single-atom fluorescence in a half-cavity* (2006); url: <http://arXiv.org/abs/cquant-ph/0610065>

#### Articles

- P. Bushev, D. Rotter, A. Wilson, F. Dubin, C. Becher, J. Eschner, R. Blatt, V. Steixner, P. Rabl, P. Zoller, *Feedback cooling of a single trapped ion*, Physical Review Letters 96, 043003 (2006)
- J. Korbicz, O. Gühne, M. Lewenstein, H. Häffner, C. F. Roos, R. Blatt, *Generalized spin-queezing inequalities in N-qubit systems*, Phys. Rev. A 74, 052319 (2006)
- M. Riebe, K. Kim, P. Schindler, T. Monz, P. O. Schmidt, T. Körber, W. Hänsel, H. Häffner, C. F. Roos, R. Blatt, *Process tomography of ion trap quantum gates*, Phys. Rev. Lett. 97, 220407 (2006)
- C. F. Roos, M. Chwalla, K. Kim, M. Riebe, R. Blatt, *Designer atoms for quantum metrology*, Nature 443, 316-319 (2006)

#### Books

- Anonymous, *Proceedings of the International Conference on Atomic Physics 869* (Eds.: R. Blatt, H. Häffner, C. F. Roos) (2006)

#### Bookitems

- R. Blatt, *Quantum Information Processing: Dream and Realization*, Entangled World (Ed.: J. Audretsch), 235-270 (2006)

#### Colloquiums

- R. Blatt, *Quantencomputer - Traum und Realisierung*, Colloquium (University Münster, 29.6.2006) (2006)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, Colloquium (University Siegen, 2.11.2006) (2006)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, Colloquium (University Ulm, 19.6.2006) (2006)

- R. Blatt, *Quantencomputer – Traum und Realisierung*, Colloquium (University Dortmund, Germany, 28.6.2006) (2006)
- R. Blatt, *Quantencomputer – Vom Traum zur Realisierung*, Colloquium Johannes Gutenberg Stiftung Mainz (Mainz, Germany, 26.6.2006) (2006)
- R. Blatt, *Quantum Computer – Dream and Realization*, Colloquium für Physik und Astronomie, Universität Basel (Basel, Schweiz, 10.2.2006) (2006)
- R. Blatt, *Quantum Computer – Dream and Realization*, Colloquium Universität Twente (University Twente, Netherlands, 22.3.2006) (2006)
- R. Blatt, *Quantum Computers – Dream and Realization*, Colloquium Universität Amsterdam (Amsterdam, Netherlands, 11.4.2006) (2006)
- R. Blatt, *Quantum Computers – Dream and Realization*, Colloquium (University Geneva, Switzerland, 12.6.2006) (2006)
- R. Blatt, *Quantum Computers- Dream and Realization*, Colloquium (CALTECH, Pasadena, USA, 25.5.2006) (2006)
- R. Blatt, *Quantum Information Science with Trapped Ca+ Ions*, Colloquium (Stanford, CA, USA, 24.5.2006) (2006)

#### Invited Talks

- R. Blatt, *Nuts and bolts of the Innsbruck ion trap setup*, Workshop on Trapped Ion Quantum Computing (Boulder, Co, USA, 21.2.2006) (2006)
- R. Blatt, *QGATES - Quantum Gates and Elementary Scalable Processors Using Deterministically Addressed Atoms*, Talk at the European Commission, QGATES network for the Descartes Prize (Brussel, Belgium, 11.7.2006) (2006)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, Ist das Universum ein Computer? - Konrad Zuses "Rechnender Raum" - Vom ersten Computer der Welt bis zur Quanteninformatik (Deutsches Technikmuseum Berlin, Berlin, Germany, 7.11.2006) (2006)
- R. Blatt, *Quantum Computer - dream and realization*, DPG Tagung (Dresden, Germany, 28.3.2006) (2006)
- R. Blatt, *Quantum Information Processing with Trapped 43Ca+ ions*, Quantum Information Science and Technology Conference and Program Review (ARO/DTO), Westin Riverwalk Hotel (San Antonio, Texas, USA, 5.-9.6.2006) (2006)
- R. Blatt, *Quantum Information Processing with Trapped Ca+ Ions*, US-Japan Workshop on Quantum Information Science (Mauii, Hawaii, USA, 16.-19.10.2006) (2006)
- R. Blatt, *Quantum Information Processing with Trapped Ca+ Ions*, Conference on Quantum Optics III (Pucon, Chile, 27.-30.11.2006) (2006)
- R. Blatt, *Quantum Information Processing with trapped ions 43Ca+ions*, Quantum Information in Science and Technology, ARO/DTO (San Antonio, 5.-9.6.2006) (2006)
- R. Blatt, *Quantum Information Science with Atomic Systems*, Gordon Research Conference Quantum Information with Atomic Systems, (Il Ciocco, Barga, Italy, 7.5-12.5.2006) (2006)
- R. Blatt, *Quantum Metrology with trapped Ions*, Ringberg Symposium (Tegernsee, Germany, 7.9.2006) (2006)
- R. Blatt, *Quantum information processing with trapped ions*, Conference on Lasers and Electro-Optics/Quantum Electronics and Laser Science Conference (CLEO/QELS) (Long Beach, Ca, USA, 23.-25.5.2006), Conference on Lasers and Electro-Optics/Quantum Electronics and laser Science Conference and Photonic Applications Systems Technologies 2006 Technical Digest, 66 (2006)
- R. Blatt, *Recent progress in trapped-ion quantum information processing*, APS March Meeting, Session H1: Quantum Information, Concepts and Computation (Baltimore, MD, USA, 14.3.2006) (2006)
- R. Blatt, *Strong Coupling with Trapped Ions*, Heraeus Workshop on Strong Coupling (Bad Honnef, Germany, 14.9.2006) (2006)
- R. Blatt, *Strong Coupling with Trapped Ions*, 377th WE-Heraeus-Seminar (Bad Honnef, 13.9-16.9.2006) (2006)
- R. Blatt, *Trapped Ions*, US-Japan Workshop on quantum Information Science (Mauii, 16.10.-19.10.2006) (2006)
- R. Blatt, *Trapped-ion quantum information processing*, 56. Jahrestagung der Österreichischen Physikalischen Gesellschaft (Graz, 18.9.-21.9.2006) (2006)
- R. Blatt, *Österreichs Universitäten als Arbeitsplatz für Forscher aus dem Ausland*, Workshop "Internationalität und Mobilität an Österreichs Universitäten" (Baden bei Wien, Österreich, 15.-16.12.2006) (2006)

#### Posters

- H. Häffner, W. Hänsel, C. F. Roos, J. Benhelm, D. Chek-al-kar, M. Chwalla, T. Körber, U. D. Rapol, M. Riebe, P. O. Schmidt, C. Becher, O. Gühne, W. Dür, R. Blatt, *Scalable entanglement of trapped ions*, Workshop on Trapped Ion Quantum Computing (NIST, Boulder, US, 2006-02-21) (2006)
- J. Benhelm, G. Kirchmair, T. Körber, C. F. Roos, R. Blatt, *Experimental investigation of 43Ca+ as a new qubit candidate*, ICAP 2006 (Innsbruck, 16.-21.7.2006) (2006)
- J. Benhelm, G. Kirchmair, T. Körber, C. F. Roos, U. D. Rapol, R. Blatt, *Investigating a new qubit candidate - Ca-43*, Workshop on Trapped Ion Quantum Computing (Boulder, US, 21.2.2006) (2006)
- P. Bushev, D. Rotter, F. Dubin, C. Becher, J. Eschner, R. Blatt, *Electronic feedback cooling of a single ion's motion*, ICAP 2006 (Innsbruck, 16.-21.7.2006) (2006)
- M. Chwalla, K. Kim, M. Riebe, C. F. Roos, R. Blatt, *# Precision spectroscopy with entangled states*, ICAP 2006 (Innsbruck, 16.-21.7.2006) (2006)

- W. Hänsel, F. Splatt, M. Haarlander, R. Blatt, *Segmented traps*, Workshop on Trapped Ion Quantum Computing (Boulder, US, 21.2.2006) (2006)
- T. Körber, W. Hänsel, H. Häffner, C. F. Roos, J. Benhelm, D. Chek-al-kar, M. Chwalla, U. D. Rapol, M. Riebe, P. O. Schmidt, C. Becher, R. Blatt, *Quantum state tomography*, Workshop on Trapped Ion Quantum Computing (Boulder, US, 21.2.2006) (2006)
- T. Lee, R. Blatt, H. Häffner, *Electrical coupling of ion traps for quantum computing*, ICAP 2006 (Innsbruck, 16.-21. 7. 2006) (2006)
- M. Riebe, K. Kim, C. F. Roos, W. Hänsel, H. Häffner, R. Blatt, *Diagnosis of ion trap quantum gates using process tomography*, ICAP 2006 (Innsbruck, 16.-21. 7. 2006) (2006)
- M. Riebe, C. F. Roos, M. Chwalla, D. Chek-al-kar, K. Kim, H. Häffner, W. Hänsel, P. O. Schmidt, R. Blatt, *Quantenprozess-tomografie als Werkzeug zur Diagnose eines Ionenfallen-Quantencomputers*, DPG (Frankfurt, Germany, in Verhandl. DPG (VI) vol. 41, 4/2006, 12.3.2006) (2006)
- C. F. Roos, M. Chwalla, M. Riebe, J. Benhelm, T. Körber, H. Häffner, W. Hänsel, P. O. Schmidt, R. Blatt, *Measurement of D5/2 quadrupole moment of  $^{40}\text{Ca}^+$* , Workshop on Trapped Ion Quantum Computing (Boulder, US, 21.2.2006) (2006)
- D. Rotter, F. Dubin, M. Mukherjee, J. Eschner, R. Blatt, *Characterising and manipulating the motion of a single ion in a Paul trap*, ICAP 2006 (Innsbruck, 16.-21. 7. 2006) (2006)
- D. Rotter, F. Dubin, M. Mukherjee, C. Russo, Chr. Becher, J. Eschner, R. Blatt, *"Characterising and manipulating the motion of a single ion" in Verhandl. DPG (VI) vol. 41*, DPG (2006)
- C. Russo, E. S. Phillips, H. G. Barros, T. Monz, C. Becher, P. O. Schmidt, R. Blatt, *Cavity-QED experiments with single trapped  $\text{Ca}^+$  ions*, DPG (Frankfurt, Germany, Verhandl. DPG (VI) vol. 41, 4/2006, 12.3.2006) (2006)
- C. Russo, T. Salzburger, E. S. Phillips, H. G. Barros, T. Monz, A. Stute, H. Ritsch, C. Becher, P. O. Schmidt, R. Blatt, *Towards a single-ion laser*, ICAP 2006 (Innsbruck, 16.-21. 7. 2006) (2006)
- F. Splatt, M. Harlander, W. Hänsel, R. Blatt, *Segmented traps for Calcium ions*, ICAP 2006 (Innsbruck, 16.-21. 7. 2006) (2006)
- F. Splatt, W. Hänsel, R. Blatt, *Segmented Ion Traps for Quantum Computation*, DPG (Frankfurt, Germany, Verhandl. DPG (VI) vol. 41, 4/2006, 12.3.2006) (2006)

#### Proceedings

- A. Andre, D. DeMille, J. M. Doyle, M. D. Lukin, S. E. Maxwell, P. Rabl, R. J. Schoelkopf, P. Zoller, *Hybrid Quantum Information Processing with Polar Molecules*, The 20th International Conference on Atomic Physics (ICAP 2006) (Innsbruck, Austria, 2006-07) (Eds.: R. Blatt, H. Häffner, C. F. Roos), 278-283 (2006)
- H. Häffner, M. Riebe, F. Schmidt-Kaler, W. Hänsel, C. F. Roos, M. Chwalla, J. Benhelm, T. W. Körber, G. Lancaster, C. Becher, D.F.V. James, R. Blatt, *Controlling three atomic qubits*, Physical Realizations of Quantum Computing (Eds.: M. Nakahara, S. Kanemitsu, M.M. Salomaa, S. Takagi), 108 (2006)
- H. Häffner, F. Schmidt-Kaler, W. Hänsel, C. F. Roos, P. O. Schmidt, M. Riebe, M. Chwalla, D. Chek-al-kar, J. Benhelm, U. D. Rapol, T. Körber, C. Becher, R. Blatt, *Long lived entangled states*, ISQM-Tokyo (Tokyo, Japan, 22-25.8.2005), Foundations of Quantum Mechanics in the Light of New Technology (Eds.: S. Ishioka, K. Fujikawa), 33 (2006)
- C. F. Roos, M. Chwalla, K. Kim, M. Riebe, R. Blatt, *Precision spectroscopy with entangled states: Measurement of electric quadrupole moments*, Atomic physics 20 (Innsbruck, Austria, 16-21.7.2006), 111-118 (2006)

#### Talks

- M. Chwalla, C. F. Roos, M. Riebe, J. Benhelm, T. Körber, H. Häffner, W. Hänsel, F. Schmidt-Kaler, R. Blatt, *Precision spectroscopy with entangled states*, DPG (Frankfurt, Germany, 12.3.2006) (2006)
- H. Häffner, T. Lee, R. Blatt, *Coupling trapped ions via transmission lines for quantum computing*, in Verhandl. DPG (VI) vol. 41, 4/2006 (2006)
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- R. Blatt, *Quantum Computer - Dream and Realization*, Colloquium (University of Linz, Austria, 19.2.2005) (2005)
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- R. Blatt, *Quantum information processing with trapped 43Ca<sup>+</sup> ions*, ARDA meeting on quantum information processing (Tampa, US) (2005)
- R. Blatt, *Entanglement and transfer of quantum information*, Conference on entanglement and quantum information (Boulder, US) (2005)
- R. Blatt, *Quantum information processing with trapped Ca<sup>+</sup> ions*, Conference on quantum information processing (Shonan Village, Japan) (2005)
- R. Blatt, *Entanglement and transfer of quantum information with trapped ions*, Australasian Conference on Laser Spectroscopy (ACOLS) (Rotorua, NZ) (2005)
- R. Blatt, *Quantum information processing with trapped ions*, Conference on Photons, Detection and Generation (Bad Honnef) (2005)
- R. Blatt, *Quantum information processing with trapped ions*, Chinese-German workshop on quantum engineering (Beijing) (2005)
- R. Blatt, *Quantum information processing with trapped Ca<sup>+</sup> ions*, Conference on quantum information processing (Copenhagen) (2005)
- R. Blatt, *Quantum information processing with trapped Ca<sup>+</sup> ions*, Conference on fluctuations and noise (Trieste) (2005)
- R. Blatt, *Quantencomputer – Traum und Realisierung*, öffentlicher Vortrag (Innsbruck) (2005)
- R. Blatt, *A viable quantum computer*, Venture capital meeting (Barcelona) (2005)
- R. Blatt, *Quantencomputer – Traum und Realisierung*, Workshop für Journalisten (IQOQI Innsbruck) (2005)
- R. Blatt, *Quantum Computer – Dream and Realization* (2005)
- R. Blatt, *ICT Tirol – Quanteninformation im ICT* (2005)
- R. Blatt, *Die Welt seit Einstein*, öffentlicher Abendvortrag, Aula Universität Innsbruck (Innsbruck, Austria, 14.4.2005) (2005)
- R. Blatt, *Ein Fest für Albert*, öffentlicher Vortrag (Stephansplatz Wien, Austria, 19.4.2005) (2005)
- R. Blatt, *Multipartite entanglement*, Seminarvortrag am NIST (Boulder, Co, USA, 3.6.2005) (2005)
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- R. Blatt, *Quantencomputer – Traum und Realisierung*, öffentlicher Abendvortrag (MPIKS, Dresden, Germany, 29.9.2005) (2005)
- R. Blatt, *Quantum Computer – Dream and Realization*, Einstein Conference (Bern, Schweiz, 12.7.2005) (2005)
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- R. Blatt, *Quantum computing with trapped ions*, EQEC (München, Germany, 17.6.2005) (2005)
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- R. Blatt, *Quantum computer - dream and realization*, Colloquium (CSIRO, Sydney, Australia, 31.7.2003) (2003)
- R. Blatt, *Quantum computer - dream and realization*, Colloquium (IBM Rüschlikon, Switzerland, 27.5.2003) (2003)

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- C. Becher, A. Kreuter, A. B. Mundt, C. Russo, H. Häffner, C. Roos, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Coherent coupling and modified spontaneous emission of a single ion in a high finesse optical cavity*, Meeting of the American Physical Society Division of Atomic, Molecular and Optical Physics (DAMOP) (Boulder, USA, 20.-24.5.2003) (2003)
- R. Blatt, *Coherent Control and Quantum Information*, Gordon Conference on Coherent Control (Tilton, Massachusetts, USA, 6.8.2003) (2003)

- R. Blatt, *Molecular Electronics*, Bad Honnef Summer School (Bad Honnef, Germany, 16.9.2003) (2003)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, Innovationsforum Innsbruck (Innsbruck, Austria, 14.3.2003) (2003)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, IT Forum Innsbruck (Innsbruck, Austria, 30.6.2003) (2003)
- R. Blatt, *Quantum computation with trapped ions*, Conference on Quantum Information Processing (Kyoto, Japan, 5.11.2003) (2003)
- R. Blatt, *Quantum information processing*, Les Houches Summer School (Les Houches, France, 1.-14.7.2003) (2003)
- R. Blatt, *Quantum information processing*, PASI Summer School (Buzios, Brazil, 1.-14.12.2003) (2003)
- R. Blatt, *Quantum information processing with trapped Ca<sup>+</sup> ions*, Gordon Research Conference on Quantum Information (Ventura, Ca., USA, 26.3.2003) (2003)
- R. Blatt, *Quantum information processing with trapped Ca<sup>+</sup> ions*, Conference on Quantum Information, Waseda University (Tokyo, Japan, 28.9.2003) (2003)
- R. Blatt, *Quantum information processing with trapped Ca<sup>+</sup> ions*, ESF Quantum Optics Conference (Granada, Spain, 30.10.2003) (2003)
- R. Blatt, *Quantum information processing with trapped ions*, Gordon Conference on Quantum Information Processing (Ventura, Ca., USA, 23.-27.3.2003) (2003)
- R. Blatt, *Realization of the Cirac-Zoller CNOT gate*, Quantum Information Conference, Tokyo University (Tokyo, Japan, 1.11.2003) (2003)
- F. Schmidt-Kaler, H. Häffner, M. Riebe, S. Gulde, G. Lancaster, T. Deuschle, C. Becher, C. Roos, J. Eschner, R. Blatt, *Realisation of the Cirac-Zoller controlled-NOT quantum gate*, European Quantum Electronics Conference (EQEC) (Munich, Germany, in: Europhysics Conference Abstracts Vo. 27E E11-1-MON, 22.-27.6.2003) (2003)

#### Posters

- H. Crepaz, M. Schulz, M. Chwalla, R. Blatt, *Mesoskopische, stark lokalisierende Dipolfallen für Rb-Atome*, in *Verhandl. DPG (VI) 38, 6/138, 2003* (2003)
- Th. Deuschle, F. Splatt, H. Häffner, R. Blatt, F. Schmid-Kaler, *Entwicklung einer miniaturisierten, segmentierten, linearen Paulfalle*, in *Verhandl. DPG (VI) 38, 6/151, 2003* (2003)
- A. Wilson, P. Bouchev, J. Eschner, C. Becher, F. Schmidt-Kaler, R. Blatt, *Vacuum-field level shifts in a single atom mediated by a single distant mirror*, 4th European Quantum Information and Computation (QIPC) Workshop (Oxford, UK, 13.-17.7.2003) (2003)

#### Proceedings

- S. Gulde, H. Häffner, M. Riebe, G. Lancaster, A. Mundt, A. Kreuter, C. Russo, C. Becher, J. Eschner, F. Schmidt-Kaler, I. L. Chuang, R. Blatt, *Quantum information processing and cavity QED experiments with trapped Ca<sup>+</sup> ions*, Atomic Physics 18 (Eds.: W. Ketterle, D. Prichard, R. Heller), 253-302 (2003)

#### Seminar Talks

- R. Blatt, *Ion trap madness at Innsbruck, some quantum information processing with trapped Ca<sup>+</sup> ions, and some mad experiments with Ba<sup>+</sup>*, Seminar Talk (NIST Boulder, Co., USA, 4.2.2003) (2003)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, talk at the Naturw. Klasse, Austrian Academy of Science (ÖAW) (Vienna, Austria, 9.10.2003) (2003)
- R. Blatt, *Quantum computer - dream and realization*, public evening lecture, Science Museum (Canberra, Australia, 28.7.2003) (2003)

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- C. Becher, A. Kreuter, A. B. Mundt, C. Russo, H. Häffner, C. Roos, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Coherent Coupling of a single Ca<sup>+</sup> ion to a high finesse optical cavity Field*, European Quantum Electronics Conference (EQEC) 2003 (Munich, Germany, in: Europhysics Conference Abstracts Vo. 27E EH1-2-WED, 22.-27.6.2003) (2003)
- C. Becher, A. Kreuter, A. B. Mundt, C. Russo, H. Häffner, C. Roos, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Kohärente Kopplung eines einzelnen Ca<sup>+</sup>-Ions an eine Hochfinesse-Resonatormode*, in *Verhandl. DPG (VI) 38, 6/125, 2003* (2003)
- C. Becher, A. Kreuter, A. B. Mundt, C. Russo, C. Maurer, C. Roos, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Coherent coupling and modified spontaneous emission of a single ion in a high finesse optical cavity*, 4th European Quantum Information and Computation (QIPC) Workshop (Oxford, UK, 13.-17.7.2003) (2003)
- P. Bushev, A. Wilson, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Vacuum field trapping effect on a single atom*, Beitrag zur 53. Jahrestagung der ÖPG (Salzburg, Austria, S. 86, 1.-2.10.2003) (2003)
- M. Chwalla, M. Riebe, S. Gulde, T. Deuschle, G. Lancaster, H. Häffner, C. Becher, C. Roos, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Optischer Frequenzstandards mit 40Ca-Ionen*, Beitrag zur 53. Jahrestagung der ÖPG (Salzburg, Austria, S. 88, 1.-2.10.2003) (2003)
- J. Eschner, A. Wilson, P. Bouchev, F. Schmid-Kaler, C. Becher, R. Blatt, *Vacuum-field level shifts in a single atom mediated by a single distant mirror*, in *Verhandl. DPG (VI) 38, 6/127, 2003* (2003)

- H. Häffner, S. Gulde, M. Riebe, G. Lancaster, C. Becher, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Precision AC-Stark measurement and a novel type of quantum Gate*, European Quantum Electronics Conference (EQEC) 2003 (Munich, Germany, in: Europhysics Conference Abstracts Vo. 27E EI2-5-MON, 22.-27.6.2003) (2003)
- W. Hänsel, C. Roos, G. Lancaster, M. Riebe, H. Häffner, S. Gulde, C. Becher, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Erzeugung und Analyse verschränkter Mehr-Teilchen Zustände mit 40Ca-Ionen*, Beitrag zur 53. Jahrestagung der ÖPG (Salzburg, Austria, S. 89, 1.-2.10.2003) (2003)
- A. Kreuter, A. B. Mundt, C. Becher, C. Russo, J. Eschner, C. Roos, F. Schmidt-Kaler, R. Blatt, *Kopplung eines einzelnen Ca+ Ions an das Vakuumfeld eines Resonators hoher Güte*, Beitrag zur 53. Jahrestagung der ÖPG (Salzburg, Austria, S. 87, 1.-2.10.2003) (2003)
- A. Kreuter, A. B. Mundt, C. Becher, C. Russo, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Cavity enhanced spontaneous emission of a single ion*, Obergurgl meeting on quantum optics (Obergurgl, Ötztal, Austria, 23.2.-1.3.2003) (2003)
- G. Lancaster, S. Gulde, M. Riebe, C. Becher, J. Eschner, H. Häffner, F. Schmidt-Kaler, I. Chuang, R. Blatt, *Implementation of the Deutsch-Josza algorithm on an ion trap quantum computer*, in *Verhandl. DPG (VI) 38, 6/130, 2003* (2003)
- G. Lancaster, S. Gulde, M. Riebe, C. Becher, H. Häffner, J. Eschner, F. Schmidt-Kaler, R. Blatt, I. Chuang, *Implementation of the Deutsch-Josza algorithm on an ion trap quantum computer*, European Quantum Electronics Conference (EQEC) 2003 (Munich, Germany, in: Europhysics Conference Abstracts Vo. 27E EI1-5-MON, 22.-27.6.2003) (2003)
- M. Riebe, S. Gulde, G. Lancaster, C. Becher, J. Eschner, H. Häffner, F. Schmidt-Kaler, R. Blatt, *Quantized Stark-shifts and implementation of a novel type of quantum gate*, in *Verhandl. DPG (VI) 38, 6/130, 2003* (2003)
- C. Roos, R. Blatt, J. Eschner, F. Schmidt-Kaler, H. Häffner, C. Becher, *Quanteninformationsverarbeitung mit Ca+-Ionen*, in *Verhandl. DPG (VI) 38, 6/151, 2003* (2003)
- C. Roos, H. Häffner, W. Hänsel, G. Lancaster, M. Riebe, S. Gulde, C. Becher, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Experimental preparation and analysis of two-ion entangled states*, 4th European Quantum Information and Computation (QIPC) Workshop (Oxford, UK, 13.-17.7.2003) (2003)
- F. Schmidt-Kaler, H. Häffner, M. Riebe, S. Gulde, G. Lancaster, T. Deuschle, C. Becher, C. Roos, J. Eschner, R. Blatt, *Quanten-Informationsverarbeitung mit linearen Ionenkristallen und die Realisierung eines universellen zwei-Quantenbit Gatters*, in *Verhandl. DPG (VI) 38, 6/118, 2003* (2003)
- A. Wilson, P. Bouchev, J. Eschner, C. Becher, F. Schmidt-Kaler, R. Blatt, *Vacuum-field level shifts in a single atom mediated by a single distant mirror*, European Quantum Electronics Conference (EQEC) 2003 (Munich, Germany, in: Europhysics Conference Abstracts Vo. 27E EH3-3-THU, 22.-27.6.2003) (2003)

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- A. B. Mundt, A. Kreuter, C. Becher, D. Leibfried, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Coupling a single atomic quantum bit to a high finesse optical cavity*, *Phys. Rev. Lett.* 89, 103001 (2002)
- H. Rohde, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Optical decay from a Fabry-Perot cavity faster than the decay time*, *J. Opt. Soc. Am. B* 19, 1425-1429 (2002)

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- R. Blatt, *Quantencomputer - Traum und Realisierung*, Colloquium (Universität Kassel, Germany, 3.7.2002) (2002)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, Colloquium (Universität Hannover, Germany, 9.4.2002) (2002)
- R. Blatt, *Quantum Optics and Precision Measurements using Trapped Ions*, Colloquium (BIPM, Paris, France, 20.2.2002) (2002)
- R. Blatt, *Quantum information processing with trapped Ca+ ions*, Colloquium (NIST Gaithersburg, 28.8.2002) (2002)
- R. Blatt, *Single atoms interfering with their mirror images*, Colloquium (ENS Paris, France, 3.6.2002) (2002)
- R. Blatt, *Towards Quantum Computation with Trapped Ions*, Colloquium (Université de Marseille, France, 16.5.2002) (2002)
- R. Blatt, *Towards Quantum Computation with Trapped Ions*, Colloquium (Kansai Advanced Research Center, Communications Research Laboratory, Kobe, Japan, 18.3.2002) (2002)
- R. Blatt, *Towards Quantum Computation with Trapped Ions*, Colloquium (University College Dublin, Ireland, 7.2.2002) (2002)
- R. Blatt, *Towards Quantum Computation with Trapped Ions*, Colloquium (Queen's University Belfast, Ireland, 6.2.2002) (2002)
- R. Blatt, *Towards Quantum Computation with Trapped Ions*, Colloquium (University of Cork, Ireland, 4.2.2002) (2002)
- R. Blatt, *Towards Quantum Computation with Trapped Ions*, Colloquium (Collège de France, Paris, France, 19.2.2002) (2002)

### Invited Talks

- R. Blatt, *Quantencomputer - Traum und Realisierung*, Jahrestagung der DGaO (Innsbruck, Austria, 24.5.2002) (2002)
- R. Blatt, *Quantum Information and Quantum Computation*, Summer School, Abdus Salam International Centre for Theoretical Physics (ICTP) Workshop (Trieste, Italy, 14.-25.10.2002) (2002)
- R. Blatt, *Quantum information processing with trapped ions*, Workshop on Quantum Information and Computation, ICTP (2 invited lectures) (Trieste, Italy, 17.-19.10.2002) (2002)
- R. Blatt, *Quantum information processing with trapped ions*, Workshop on "Practical realizations of quantum information processing", Royal Society London (London, UK, 13.-14.11.2002) (2002)

- R. Blatt, *Quantum information processing with trapped ions*, Workshop on "Sicherheit in der Informatik" (Munich, Germany, 27.-28.11.2002) (2002)
- J. Eschner, S. Gulde, H. Häffner, H. Rohde, P. Barton, F. Schmidt-Kaler, C. Roos, D. Leibfried, A. Mundt, A. Kreuter, C. Becher, R. Blatt, *Quantum information processing with trapped Ca<sup>+</sup> ions*, European Group of Atomic Spectroscopy (EGAS) (Sofia, Bulgarien, 9.-12.7.2002) (2002)
- J. Eschner, G. Morigi, C. Roos, F. Schmidt-Kaler, D. Leibfried, R. Blatt, *Ground state laser cooling of trapped ions*, Cooling 2002 (Visby, Sweden, 9.6.2002) (2002)
- J. Eschner, G. Morigi, C. Roos, F. Schmidt-Kaler, D. Leibfried, R. Blatt, *Ground state laser cooling of trapped ions*, Cooling 2002 (Visby, Sweden, 9.6.2002) (2002)
- J. Eschner, C. Raab, P. Bouchev, A. Wilson, A. Mundt, A. Kreuter, F. Schmidt-Kaler, C. Becher, R. Blatt, *Interference of single photons from single atoms*, Adriatico Workshop on Quantum Interferometry (Triest, Italy, 12.3.2002) (2002)
- S. Gulde, H. Häffner, M. Riebe, G. P.T. Lancaster, A. Mundt, A. Kreuter, C. Russo, C. Becher, J. Eschner, F. Schmidt-Kaler, I. L. Chuang, R. Blatt, *Quantum information processing with trapped Ca<sup>+</sup> ions*, International Conference on Atomic Physics (ICAP) (Boston, Ma., USA, 29.7.-2.8.2002) (2002)
- S. Gulde, H. Häffner, M. Riebe, G. P.T. Lancaster, A. Mundt, A. Kreuter, C. Russo, C. Becher, J. Eschner, F. Schmidt-Kaler, I. L. Chuang, R. Blatt, *Quantum information processing with trapped Ca<sup>+</sup> ions*, Feynman Festival, College Park (Md., Usa, 23.-27.8.2002) (2002)
- S. Gulde, H. Häffner, M. Riebe, G. P.T. Lancaster, A. Mundt, A. Kreuter, C. Russo, C. Becher, J. Eschner, F. Schmidt-Kaler, I. L. Chuang, R. Blatt, *Quantum information processing with trapped Ca<sup>+</sup> ions*, Quantum Information and Computation Conference (QIPC) (Dublin, Irland, 17.-19.9.2002) (2002)
- C. Raab, J. Eschner, P. Bouchev, A. Wilson, F. Schmidt-Kaler, R. Blatt, *Light interference from single atoms and their mirror images*, International Quantum Electronics Conference (IQEC) (Moskau, Russland, 24.-28.7.2002) (2002)
- F. Schmidt-Kaler, H. Rohde, S. Gulde, A. Mundt, P. Barton, D. Leibfried, J. Eschner, R. Blatt, *Precision spectroscopy, control and quantum state manipulation of trapped Ca<sup>+</sup> ions*, Atom Interferometry and Precision Measurements (Lunteren, Holland, 28.-30.9.2002) (2002)
- F. Schmidt-Kaler, H. Rohde, S. Gulde, A. Mundt, P. Barton, D. Leibfried, J. Eschner, R. Blatt, *Towards quantum computation with trapped ions*, Workshop on the security in the information sciences (Weyberhöfe (near Frankfurt/Main), Germany, 21.-22.1.2002) (2002)
- F. Schmidt-Kaler, H. Rohde, S. Gulde, A. Mundt, P. Barton, D. Leibfried, J. Eschner, R. Blatt, *Towards quantum information processing with trapped Ca<sup>+</sup> ions*, Southwest Quantum Information Conference (Boulder, Co., USA, 8.-11.3.2002) (2002)
- F. Schmidt-Kaler, H. Rohde, S. Gulde, A. Mundt, P. Barton, D. Leibfried, J. Eschner, R. Blatt, *Towards quantum information processing with trapped Ca<sup>+</sup> ions*, Workshop on Quantum Information Processing (Tokyo, Japan, 12.-14.3.2002) (2002)

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- G. Lancaster, S. Gulde, M. Riebe, H. Häffner, P. Barton, F. Schmidt-Kaler, R. Blatt, *Experimente zur Verwirklichung eines Quantengatters in einer linearen Ionenfalle*, Beitrag zur 52. Jahrestagung der ÖPG (Leoben, Austria, S. 51, 23.-26.9.2002) (2002)
- D. Rotter, S. Gulde, P. Barton, F. Schmidt-Kaler, W. Hogervorst, R. Blatt, *Photoionisation von Ca*, Beitrag zur 52. Jahrestagung der ÖPG (Leoben, Austria, S. 69, 23.-26.9.2002) (2002)
- M. Schulz, H. Crepaz, M. Chwalla, M. Cumme, J. Eschner, R. Blatt, *Experimente mit kalten Rubidiumatomen in einer tiefen, stark lokalisierenden Dipolfalle*, in *Verhandl. DPG (VI) 37, 2/133, 2002* (2002)

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- C. F. Roos, D. Leibfried, F. Schmidt-Kaler, J. Eschner, R. Blatt, *Sideband cooling and state manipulation: Application in precision spectroscopy*, Proc. 6th Symp. Frequency Standards and Metrology (Ed.: P. Gill), 376-384 (2002)
- F. Schmidt-Kaler, J. Eschner, R. Blatt, D. Leibfried, C. Roos, G. Morigi, *Laser Cooling of trapped ions*, Laser Physics at the limit (Eds.: D. Meschede, H. Figger, C. Zimmermann), 243-260 (2002)
- F. Schmidt-Kaler, D. Leibfried, J. Eschner, R. Blatt, *Towards Quantum Computation with trapped Ca<sup>+</sup> Ions*, Proc. of the International school of Physics Enrico Fermi, Course CXLVIII "Experimental Quantum Computation and Information", 197-211 (2002)

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- P. Bouchev, A. Wilson, J. Eschner, R. Blatt, *Interference experiments with trapped Ba<sup>+</sup> ions*, in *Verhandl. DPG (VI) 37, 2/127, 2002* (2002)
- M. Chwalla, M. Schulz, H. Crepaz, J. Eschner, R. Blatt, *Ein phasenstabilisiertes Diodenlasersystem zur Grundzustandsspektroskopie an <sup>87</sup>Rb*, in *Verhandl. DPG (VI) 37, 2/142, 2002* (2002)
- H. Häffner, S. Gulde, C. Roos, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Welche Zuverlässigkeit kann man von Ionenfallen-Quantengattern erwarten?*, in *Verhandl. DPG (VI) 37,, 2/104,2002* (2002)
- A. B. Mundt, A. Kreuter, C. Becher, F. Schmidt-Kaler, J. Eschner, D. Leibfried, R. Blatt, *Coupling a single trapped ion to a high finesse cavity*, in *Verhandl. DPG (VI) 37, 2/126, 2002* (2002)
- M. Riebe, S. Gulde, H. Häffner, G. Lancaster, P. Barton, F. Schmidt-Kaler, R. Blatt, *Experimente zur Verwirklichung eines Quantengatters in einer linearen Ionenfalle*, in *Verhandl. DPG (VI) 37, 2/104, 2002* (2002)

- P. Spitzer, S. Gulde, G. Lancaster, F. Schmidt-Kaler, R. Blatt, *Pound-Drever-Hall Frequenzstabilisierung eines Diodenlasers bei 397 nm*, in *Verhandl. DPG (VI) 37, 2/141, 2002* (2002)
- A. Wilson, P. Bouchev, J. Eschner, F. Schmidt-Kaler, C. Becher, R. Blatt, *Light Interference Experiments with Single Barium Ions*, YEP conference (Oberurgl, Ötztal, Austria, 04/2002) (2002)

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- R. Blatt, *Delicate information*, *Nature* 412, 773 (2001)
- J. Eschner, C. Raab, F. Schmidt-Kaler, R. Blatt, *Light interference from single atoms and their mirror images*, *Nature* 413, 495-498 (2001)
- S. Gulde, D. Rotter, P. A. Barton, F. Schmidt-Kaler, R. Blatt, W. Hogervorst, *Simple and efficient photoionization loading of ions for precision ion-trapping experiments*, *Applied Physics B: Lasers and Optics* 73, 861-863 (2001)
- H. Rohde, S. Gulde, C. F. Roos, P. A. Barton, D. Leibfried, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Sympathetic ground state cooling and coherent manipulation with two-ion-crystals*, *J. Opt. B: Quantum Semiclass. Opt.* 3, 34 (2001)
- F. Schmidt-Kaler, J. Eschner, G. Morigi, C. F. Roos, D. Leibfried, A. B. Mundt, R. Blatt, *Laser cooling with electromagnetically induced transparency: Application to trapped samples of ions or neutral atoms*, *Applied Physics B: Lasers and Optics* 73, 807 (2001)

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- Anonymous, *Quantum and Semiclassical Optics*, *Journal of Optics B Quantum and Semiclass. Opt.* 3, No. 1 (Eds.: R. Blatt, C. Monroe, P. Tombesi) (2001)

### Colloquiums

- R. Blatt, *Einzelne Atome in Fallen*, Colloquium (Universität Hamburg, Germany, 25.11.2001) (2001)
- R. Blatt, *Experiments with single ions: From fundamental physics to quantum technology*, Colloquium (Australien National University (ANU), Canberra, Australia, 23.1.2001) (2001)
- R. Blatt, *Experiments with single ions: From fundamental physics to quantum technology*, Colloquium, CSIRO (Sydney, Australien, 16.1.2001) (2001)
- R. Blatt, *Experiments with single ions: From fundamental physics to quantum technology*, Colloquium (Melbourne University, Melbourne, Australia, 24.1.2001) (2001)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, Colloquium (Universität Bonn, Germany, 26.11.2001) (2001)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, Colloquium (TU Wien, Austria, 7.3.2001) (2001)
- R. Blatt, *Quantencomputer - Traum und Realisierung*, Colloquium (Universität Karlsruhe, Germany, 14.2.2001) (2001)
- R. Blatt, *Quantum Information Processing with Trapped Ions*, Colloquium (Institute for Theoretical Physics, Academia Sinica, Peking, China, 31.8.2001) (2001)
- R. Blatt, *Quantum computation with trapped ions*, Colloquium (NIST Gaithersburg, MD, USA, 14.5.2001) (2001)
- R. Blatt, *Quantum computer - dream and realization*, Colloquium (Max-Planck-Institut für Quantenoptik, Garching, Germany, 26.6.2001) (2001)

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- R. Blatt, *Enrico Fermi summer school on Quantum Information*, Summer School (Varenna, Italy, 16.-27.7.2001) (2001)
- R. Blatt, *Experiments with single trapped ions in Innsbruck*, IHP network meeting, QUEST (Gif sur Yvette, France, 10.7.2001) (2001)
- R. Blatt, C. Roos, F. Schmidt-Kaler, H. Rohde, S. Gulde, A. Mundt, D. Leibfried, J. Eschner, *Quantum Computation with Trapped Ions*, Winter School on Quantum Information (Dolomieu, France, 27.2.2001) (2001)
- R. Blatt, F. Schmidt-Kaler, C. Roos, H. Rohde, S. Gulde, A. B. Mundt, D. Leibfried, J. Eschner, *Quantum computation with trapped ions*, Workshop on Quantum Information Processing, Fields Institute, Univ. Toronto (Toronto, Canada, 19.5.2001) (2001)
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- C. Raab, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Single ions interfering with their mirror images*, OSA Conference Long Beach (Long Beach, Ca., USA, 14.-18.10.2001) (2001)
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- R. Blatt, *Quantcomputer mit gespeicherten Ionen*, Colloquium (Universität Ulm, Germany, 8.6.1998) (1998)

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- R. Blatt, *Quantum computation with trapped ions*, Colloquium (University of Texas, Austin, TX, USA, 7.7.1997) (1997)
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- U. Hauschildt, W. Bechter, K. Glatzel, M. Schulz, F. Schmidt-Kaler, R. Blatt, *Eine neue Ionenfalle zur starken Speicherung auf einem Dipolübergang*, in *Verhandl. DPG (VI) 32, 324, 1997* (1997)
- H. Rohde, Ch. Roos, F. Schmidt-Kaler, J. Eschner, R. Blatt, *Ein Hochfinesse-Resonator für die Laser-Stabilisierung*, Beitrag zur 47. Jahrestagung der ÖPG (Wien, Austria, S. 269, 22.-26.9.1997) (1997)
- F. Schmidt-Kaler, H. Nägerl, J. Eschner, R. Blatt, *Ion strings in linear traps*, TMR network (Quantum Structures) meeting (Garching, 24.-27.7.1997) (1997)
- M. Schulz, F. Schmidt-Kaler, J. Eschner, R. Blatt, *Frequenzverdoppelter Dioden-Laser bei 397 nm*, in *Verhandl. DPG (VI) 32, 331, 1997* (1997)

### Seminar Talks

- R. Blatt, *Quantum computation with trapped ions*, Seminar Talk (Phillips Labs, Albuquerque, NM, USA, 27.2.1997) (1997)
- R. Blatt, *Quantum computation with trapped ions*, Seminar Talk (University of New Mexico, Albuquerque, NM, USA, 28.2.1997) (1997)
- R. Blatt, *Quantum computation with trapped ions*, Seminar Talk (TU Wien, Austria, 27.5.1997) (1997)
- R. Blatt, *Quantum computation with trapped ions*, Seminar Talk (East China Normal University, China, 2.6.1997) (1997)
- R. Blatt, *Quantum motion of single trapped ions*, Seminar Talk (NIST Boulder, Co., USA, 25.2.1997) (1997)

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- W. Bechter, H. C. Nägerl, M. Schulz, F. Schmidt-Kaler, J. Eschner, R. Blatt, *Resonanzfluoreszenz einzelner Barium-Ionen*, Beitrag zur 47. Jahrestagung der ÖPG (Wien, Austria, S. 282, 22.-26.9.1997) (1997)
- J. Bolle, N. Pörtner, C. Raab, H. Langfischer, F. Schmidt-Kaler, J. Eschner, R. Blatt, *Spektroskopie an einzelnen Barium Ionen mit Dioden-Lasern*, in *Verhandl. DPG (VI) 32, 334, 1997* (1997)
- H. Langfischer, Ch. Raab, J. Bolle, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Resonanzfluoreszenz einzelner Barium-Ionen*, Beitrag zur 47. Jahrestagung der ÖPG (Wien, Austria, S. 281, 22.-26.9.1997) (1997)
- H. C. Nägerl, J. Eschner, F. Schmidt-Kaler, R. Blatt, *Eine lineare Falle für ein Quantengatter mit gespeicherten Ionen*, in *Verhandl. DPG (VI) 32, 324, 1997* (1997)
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- F. Schmidt-Kaler, H. C. Nägerl, W. Bechter, J. Eschner, R. Blatt, *Kristalle aus Kalzium-Ionen für einen Quanten-Rechner*, Beitrag zur 47. Jahrestagung der ÖPG (Wien, Austria, S. 265, 22.-26.9.1997) (1997)

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- R. Blatt, P. Zoller, *Quantengatter für Quantenrechner*, *Physikalische Blätter* 52, 205 (1996)
- J. I. Cirac, A. S. Parkins, R. Blatt, P. Zoller, *Non-Classical States of Motion in Ion Traps*, *Adv. Atom. Molec. and Opt. Physics* 37, 238-296 (1996)

- J. F. Poyatos, J. I. Cirac, R. Blatt, P. Zoller, *Trapped ions in the strong excitation regime: ion interferometry and non-classical states*, Phys. Rev. A 54, 1532 (1996)
- J. F. Poyatos, R. Walser, J. I. Cirac, R. Blatt, P. Zoller, *Motion tomography of a single trapped ion*, Phys. Rev. A 53, R1966 (1996)
- D. Reiß, A. Lindner, R. Blatt, *Cooling of trapped multilevel atoms: A numerical analysis*, Phys. Rev. A 54, 5133 (1996)

#### Colloquiums

- R. Blatt, *Quantenrechner mit gespeicherten Ionen*, Colloquium (Universität Erlangen, Germany, 17.6.1996) (1996)

#### Invited Talks

- R. Blatt, *Ion Cooling and Quantum Computation*, eingeladener Vortrag auf der Conference on Highly Charged Ions (Stockholm, 3.-7.6.1996) (1996)

#### Posters

- J. I. Cirac, S. Gardiner, J. Poyatos, R. Blatt, P. Zoller, *Quantum Reservoir Engineering with Cold Trapped Ions*, Beitrag zum Quantum Optics Workshop, Satellite meeting in Cairns zur IQEC in Sydney, 1996 (1996)
- C. D. Ohl, H. C. Nägerl, R. Blatt, W. Lauterborn, *Kurzzeitphotographie der Vielblasensonolumineszenz*, Beitrag zur DAGA 96 (Bonn, Germany, DAGA 96, S. 32, 26.-29.2.1996) (1996)

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- R. Blatt, J. F. Poyatos, J. I. Cirac, P. Zoller, *Quantum motion of a trapped ion: Schrödinger cats, ion interferometry and quantum tomography*, Proceedings of the 5th Symposium on Frequency Standards and Metrology (Ed.: J. C. Bergquist), 20 (1996)

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- J. Bolle, C. Raab, N. Pörtner, H. Rohde, F. Schmidt-Kaler, R. Blatt, *Spektroskopie an einzelnen Ba<sup>+</sup> Ionen*, Beitrag zur 46. Jahrestagung der ÖPG (Linz, Austria, S. 114, 23.-27.9.1996) (1996)
- U. Hauschildt, H. C. Nägerl, C. Roos, K. Glatzel, M. Schulz, F. Schmidt-Kaler, R. Blatt, *Eine neue Falle für die Quantenoptik mit einzelnen Ca<sup>+</sup> Ionen*, Beitrag zur 46. Jahrestagung der ÖPG (Linz, Austria, S. 120, 23.-27.9.1996) (1996)

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- M. Schubert, I. Siemers, R. Blatt, W. Neuhauser, P. E. Toschek, *Transient internal dynamics of a multi-level ion*, Phys. Rev. A 52, 2994 (1995)

##### Colloquiums

- R. Blatt, *Quantum Optics with Single Trapped Ions*, Colloquium (Rice University, Houston, Texas, USA, 20.10.1995) (1995)

##### Invited Talks

- R. Blatt, *Nonclassical states of motion of a single trapped ion*, eingeladener Vortrag auf dem Workshop des EC Network Nonclassical Light and Satellite Meeting Application of techniques and methods of nonclassical light: gravitational waves detector, quantum cryptography, quantum computing (Corvara, Italy, 28.1.-4.2.1995) (1995)
- R. Blatt, *Quantencomputer mit gespeicherten Ionen*, BMFT Anhörung (Bonn, Germany, 22.12.1995) (1995)
- R. Blatt, *Single Ions and Quantum Optics*, eingeladener Vortrag auf der 5th European EPS Conference on Atomic and Molecular Physics (Edinburgh, UK, in Europhysics Conference Abstracts, Vol. 19A, I, p. 17, ed. by R.C. Thompson, EPS 1995, 3.-7.4.1995) (1995)

##### Proceedings

- R. Blatt, *Spectroscopy and Quantum Optics with Stored Ions*, Atomic Physics 14 (Eds.: D. J. Wineland, C. E. Wieman, S. J. Schmith), 219 (1995)

##### Seminar Talks

- R. Blatt, *Quantencomputer mit gespeicherten Ionen*, Seminar Talk (Universität Karlsruhe, Germany, 15.11.1995) (1995)
- R. Blatt, *Quantenoptik und Spektroskopie mit einzelnen Atomen*, Seminar Talk (Max-Planck-Institut für Strömungsforschung, Göttingen, Germany, 19.4.1995) (1995)

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- R. Huesmann, P. Courteille, I. Johannsen, R. Blatt, W. Neuhauser, P. E. Toschek, *Anregungsspektroskopie an einem einzelnen Ytterbium-Ion*, in *Verhandl. DPG (VI) 30, 326, 1995* (1995)
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- J. I. Cirac, R. Blatt, A. S. Parkins, P. Zoller, *Quantum collapse and revival in the motion of a single trapped ion*, *Phys. Rev. A* 49, 1202–1207 (1994)
- J. I. Cirac, L. J. Garay, R. Blatt, A. S. Parkins, P. Zoller, *Laser cooling of trapped ions: The influence of micromotion*, *Phys. Rev. A* 49, 421–432 (1994)
- Ph. Courteille, L. S. Ma, W. Neuhauser, R. Blatt, *Frequency Measurement in  $^{130}\text{Te}^2$  near 467 nm*, *Appl. Phys. B* 59, 187 (1994)
- J. Walz, I. Siemers, M. Schubert, W. Neuhauser, R. Blatt, E. Teloy, *Ion storage in the rf-octupole trap*, *Phys. Rev. A* 50, 4122 (1994)

#### Books

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#### Colloquiums

- R. Blatt, *Physik und Anwendungen gespeicherter Ionen*, Colloquium (Universität Kaiserslautern, Germany, 20.5.1994) (1994)
- R. Blatt, *Quantenoptik mit einzelnen Atomen*, Colloquium (Universität Hannover, Germany, 11.1.1994) (1994)
- R. Blatt, *Quantenoptik und Spektroskopie mit einzelnen Ionen*, Colloquium (Universität Göttingen, Germany, 14.4.1994) (1994)
- R. Blatt, *Quantenoptik und Spektroskopie mit einzelnen Ionen*, Colloquium (Technische Hochschule Darmstadt, Germany, 21.6.1994) (1994)
- R. Blatt, *Quantum optics with single ions*, Colloquium (University of Otago, Dunedin, New Zealand, 31.1.1994) (1994)
- R. Blatt, *Spectroscopy and quantum optics with single ions*, Colloquium (Australian National University, Canberra, Australien, 4.2.1994) (1994)
- R. Blatt, *Spectroscopy and quantum optics with single ions*, Colloquium (University of Melbourne, Australien, 2.2.1994) (1994)
- R. Blatt, *Spektroskopie an einzelnen Atomen*, Colloquium (Universität Göttingen, Germany, 24.10.1994) (1994)
- R. Blatt, *Spektroskopie an einzelnen Atomen*, Colloquium (Universität Jena, Germany, 1.11.1994) (1994)

#### Invited Talks

- B. Appasamy, I. Siemers, Y. Stalgies, R. Blatt, W. Neuhauser, P. E. Toschek, *Single-Ion Cooling Analyzed by Quantized Fluorescence*, Beitrag zum Deutsch-Russischen Laserseminar (Kassel, Germany, 28.2.-3.3.1994) (1994)
- R. Blatt, *Quantenoptik mit einzelnen Ionen*, in *Verhandl. DPG (VI) 29, 628, 1994, Hauptvortrag* (1994)
- R. Blatt, W. Neuhauser, I. Cirac, A. S. Parkins, P. Zoller, *Präparation von Fock-Zuständen in der Bewegung einzelner Ionen*, DFG Kolloquium (Bonn, Wachtberg-Niederbachem, Germany, 13.-15.6.1994) (1994)

#### Posters

- I. Siemers, B. Appasamy, Y. Stalgies, V. Enders, Ph. Courteille, R. Huesmann, L. S. Ma, W. Neuhauser, R. Blatt, P. E. Toschek, *Optical double Resonance on Single Cold Ions*, Beitrag zur CPEM'94 Konferenz (Boulder, Co, USA, in Proceedings Conference on Precision Electromagnetic Measurements, Boulder, 1994, 27.6.-1.7.1994) (1994)

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- J. I. Cirac, R. Blatt, A. S. Parkins, P. Zoller, *Nonclassical states of motion and quantum collapse and revival in an ion trap*, *Quantum Optics VI in Springer Proceedings in Physics 77* (Eds.: D. F. Walls, J. D. Harvey), 112 (1994)

#### Seminar Talks

- R. Blatt, *Quantenbewegung gespeicherter Ionen*, Seminar Talk (Universität Hamburg, Germany, 8.11.1994) (1994)
- R. Blatt, *Quantum optics with single ions*, Seminar Talk (NIST Boulder, Co., USA, 10.2.1994) (1994)
- R. Blatt, *Spectroscopy and quantum optics with single ions*, Seminar Talk (Macquarie University, Sydney, Australien, 7.2.1994) (1994)

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- Ph. Courteille, L. S. Ma, W. Neuhauser, R. Blatt, *Präzisionsbestimmung optischer Frequenzen bei 467 nm*, in *Verhandl. DPG (VI) 29, 669, 1994* (1994)
- G. Dill, B. Appasamy, I. Siemers, W. Neuhauser, R. Blatt, *Dynamik der Ionenbewegung in der Achtpol-Hochfrequenzfalle*, in *Verhandl. DPG (VI) 29, 630, 1994* (1994)
- V. Enders, Ph. Courteille, R. Huesmann, L. S. Ma, W. Neuhauser, R. Blatt, P. E. Toschek, *Microwave-optical double resonance on a single laser-cooled  $^{171}\text{Yb}^+$ -Ion*, Beitrag zur IQEC'94 Konferenz (Anaheim, Md, USA, in International Quantum Electronics Conference, 1994, OSA Technical Digest Series, Vol. 9 (Optical Society of America, Washington, D.C. 1994), p. 61, 8.-13.5.1994) (1994)
- L. S. Ma, Ph. Courteille, G. Ritter, W. Neuhauser, R. Blatt, *Precision laser spectrometer with multiple frequency modulation*, Beitrag zur IQEC'94 Konferenz (Anaheim, Md, USA, in International Quantum Electronics Conference, 1994, OSA Technical Digest Series, Vol. 9 (Optical Society of America, Washington, D.C. 1994), p. 60, 8.-13.5.1994) (1994)

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- T. Raab, V. Gomer, W. Kaenders, D. Meschede, R. Blatt, *Penningfalle aus Permanentmagneten: Elektron-Affinität von H-Ionen*, in *Verhandl. DPG (VI) 29, 724, 1994* (1994)
- J. Schmiedmayer, R. Blatt, *Quantenbewegung in einer Kingdonfalle*, in *Verhandl. DPG (VI) 29, 631, 1994* (1994)

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- J. I. Cirac, R. Blatt, A. S. Parkins, P. Zoller, *Spectrum of resonance fluorescence from a single trapped ion*, *Phys. Rev. A* 48, 2169–2181 (1993)
- J. I. Cirac, R. Blatt, A. S. Parkins, P. Zoller, *Laser cooling of trapped ions with polarization gradients*, *Phys. Rev. A* 48, 1434–1445 (1993)
- J. I. Cirac, A. S. Parkins, R. Blatt, P. Zoller, *Cooling of a trapped ion coupled strongly to a quantized cavity mode*, *Optics Communications* 97, 353–359 (1993)
- J. I. Cirac, R. Blatt, A. S. Parkins, P. Zoller, *Preparation of Fock states by observation of quantum jumps in an ion trap*, *Phys. Rev. Lett.* 70, 762–765 (1993)
- J. I. Cirac, A. S. Parkins, R. Blatt, P. Zoller, *“Dark” squeezed states of the motion of a trapped ion*, *Phys. Rev. Lett.* 70, 556–559 (1993)
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- L. S. MA, Ph. Courteille, G. Ritter, W. Neuhauser, R. Blatt, *Modulation-Transfer Spectroscopy in Te2 at 467 nm*, *Appl. Phys. B* 57, 159 (1993)
- J. Walz, I. Siemers, M. Schubert, W. Neuhauser, R. Blatt, *Motional Stability of a Nonlinear Parametric Oscillator: Ion Storage in the RF Octupole Trap*, *Europhys. Lett.* 21, 183 (1993)

#### Colloquiums

- R. Blatt, *Quantenoptik mit einzelnen Atomen*, Colloquium (Universität Innsbruck, Austria, 7.3.1993) (1993)

#### Invited Talks

- R. Blatt, *ERASMUS Intensive Course on Quantum Optics*, Summer School (Elounda, Kreta, 3.-14.5.1993) (1993)
- R. Blatt, *Moderne Experimente in Spektroskopie und Quantenoptik*, Talk (Universität Rostock, Germany, 1.4.1993) (1993)
- R. Blatt, *Quantum Optics with Single Ions*, eingeladenener Vortrag auf dem "Quantum Optics Workshop" der UK Quantum Electronic Conference 11 (Belfast, UK, 30.8.-3.9.1993) (1993)
- R. Blatt, *Spectroscopy and Quantum Optics with Single Trapped Ions*, eingeladenener Vortrag auf der Gordon-Conference on Atomic Physics (Wolfeborough, NH, USA, 5.-9.7.1993) (1993)
- R. Blatt, *Spektroskopie und Quantenoptik mit einzelnen Atomen*, Talk (Universität Mainz, Germany, 22.1.1993) (1993)

#### Posters

- C. Cirac, R. Blatt, A. Parkins, P. Zoller, *Preparation of non-classical states of motion in an ion-trap*, Beitrag zur Gordon-Conference on Atomic Physics (Wolfeborough, New Hampshire, USA, 5.-9.7.1993) (1993)
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- J. I. Cirac, R. Blatt, A. S. Parkins, P. Zoller, *Preparation of Fock states and squeezed states of motion in an ion trap*, *Bull. Am. Phys. Soc.* 38, No. 3, 1122, 1993 (1993)
- J. I. Cirac, R. Blatt, A. S. Parkins, P. Zoller, *Preparation of Fock states by observation of quantum jumps in an ion trap*, Beitrag zur QELS'93 Konferenz (Baltimore, Md., USA, in Quantum Electronics and Laser Science Conference, 1993 OSA Technical Digest Series, Vol. 3 (Optical Society of America, Washington, D.C. 1993), p. 284, 2.-7.5.1993) (1993)
- J. I. Cirac, R. Blatt, A. S. Parkins, P. Zoller, *Präparation von nichtklassischen Zuständen der Bewegung in einer Ionenfalle*, in *Verhandl. DPG (VI) 28, 440, 1993* (1993)

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- J. I. Cirac, R. Blatt, A. S. Parkins, P. Zoller, *Spektrum der Resonanzfluoreszenz einzelner gespeicherter Ionen*, in *Verhandl. DPG (VI) 28, 421, 1993* (1993)
- V. Enders, Ph. Courteille, R. Blatt, W. Neuhauser, P. E. Toschek, *Spektroskopie eines einzelnen  $171\text{Yb}^+$ -Ions*, in *Verhandl. DPG (VI) 28, 439, 1993* (1993)
- V. Gomer, D. Meschede, R. Blatt, *Penningfalle aus Permanentmagneten: Elektron-Affinität von H-Ionen*, in *Verhandl. DPG (VI) 28, 420, 1993* (1993)
- Y. Stalgies, I. Siemers, B. Appasamy, R. Blatt, W. Neuhauser, P. E. Toschek, *Lichtverschiebung der Resonanzen eines einzelnen  $\text{Ba}^+$ -Ions*, in *Verhandl. DPG (VI) 28, 420, 1993* (1993)

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- R. Blatt, P. Gill, R. Thompson, *Current Perspectives on The Physics of Trapped Ions*, *J. Mod. Opt.* 39, 193 (1992)
- M. Desaintfusien, M. Schubert, I. Siemers, R. Blatt, *Kinetic energy and spatial width of ion clouds in Paul traps*, *Appl. Phys. B54*, 246 (1992)
- V. Enders, P. Courteille, W. Neuhauser, R. Blatt, *Microwave Spectroscopy of Motional Sidebands in Clouds of Trapped Ions*, *J. Mod. Opt.* 39, 325 (1992)
- M. Schubert, I. Siemers, R. Blatt, W. Neuhauser, P. E. Toschek, *Photon Anti-Bunching and Non-Poissonian Fluorescence of a Single Three-Level Ion*, *Phys. Rev. Lett.* 68, 3016 (1992)
- I. Siemers, M. Schubert, R. Blatt, W. Neuhauser, P. E. Toschek, *The 'Trapped State' of a Trapped Ion - Line Shifts and Shape*, *Europhys. Lett.* 18, 139 (1992)
- W. Vogel, R. Blatt, *Resonance fluorescence from three-level atoms: Atomic coherences and squeezed light*, *Phys. Rev. A* 45, 3319 (1992)

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- Anonymous, *The Physics of Trapped Ions*, *Journal of Modern Optics* 39 (2) (Eds.: R. Blatt, P. Gill, R. C. Thompson) (1992)

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- R. Blatt, *Laser Cooling of Trapped Ions*, *Fundamental Systems in Quantum Optics* (Eds.: J. Dalibard, J. M. Raymond, J. Zinn-Justin), 253 (1992)

### Colloquiums

- R. Blatt, *Single Ion Trapping - Spectroscopy and Quantum Optics*, Colloquium (Universität Beijing, China, 8.4.1992) (1992)
- R. Blatt, *Spektroskopie mit einzelnen Atomen*, Colloquium (Universität Hannover, Germany, 7.1.1992) (1992)
- R. Blatt, *Spektroskopie mit einzelnen Atomen*, Colloquium (Universität Giessen, Germany, 30.1.1992) (1992)

### Invited Talks

- R. Blatt, *DPG-Schule für Quantenoptik II*, Summer School (Bad Honnef, Germany, 5.-9.10.1992) (1992)
- R. Blatt, *Präzisionsspektroskopie mit gespeicherten Ionen*, in *Verhandl. DPG (VI) 27, 1283 (1992) (Hauptvortrag)* (1992)
- M. Schubert, I. Siemers, R. Blatt, W. Neuhauser, P. E. Toschek, *Photon Correlations in the Resonance Fluorescence of a Single Trapped Ion*, eingeladener Vortrag im Shanghai International Symposium on Quantum Optics SISQO '92 (Shanghai, China, 29.3.-2.4.1992) (1992)

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- R. Blatt, *Seitenbandkühlung und Sisyphuskühlung von Ionen in der invertierten Paul-Straubel-Falle und in der Stehwelle*, DFG Kolloquium (Bonn, Wachtberg-Niederbachem, Germany, 22.-24.5.1992) (1992)
- I. Siemers, M. Schubert, R. Blatt, W. Neuhauser, P. E. Toschek, *Frequency Control of Light by the 'Trapped State' of a Trapped Ion*, Beitrag zur Conference on Precision Electromagnetic Measurements CPEM'92 (Paris, France, Book of abstracts, p. 36-37, 9.-12.6.1992) (1992)
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### Seminar Talks

- R. Blatt, *Dynamics of Ion Clouds in Paul Traps*, Seminar Talk (Academia Sinica, Wuhan, China, 3.4.1992) (1992)
- R. Blatt, *Ionenwolken in Hochfrequenzfallen*, Seminar Talk (Kernforschungszentrum Karlsruhe, Germany, 15.1.1992) (1992)

- R. Blatt, *Laser Cooling in Traps and Frequency Standards with Trapped Ions*, Seminar Talk (Academia Sinica, Wuhan, China, 3.4.1992) (1992)
- R. Blatt, *Quantum Optics with Single Trapped Ions*, Seminar Talk (Academia Sinica, Wuhan, China, 4.4.1992) (1992)
- R. Blatt, *Spektroskopie mit einzelnen Atomen*, Seminar Talk (Universität Kaiserslautern, Germany, 24.2.1992) (1992)
- R. Blatt, *Spektroskopie mit einzelnen Atomen*, Seminar Talk (Universität Erlangen, Germany, 26.6.1992) (1992)

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- J. I. Cirac, R. Blatt, P. Zoller, W. D. Phillips, *Laser Cooling of Trapped Ions in a Standing Wave*, Beitrag zur IQEC'92 Konferenz (Wien, Austria, in International Conference on Quantum Electronics Technical Digest Series 1992, Vol. 9, p. 284, 14.-19.6.1992) (1992)
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- I. Siemers, M. Schubert, R. Blatt, W. Neuhauser, P. E. Toschek, *The Trapped State of a Trapped Ion - Light Spectra and Photon Correlation*, Beitrag zur IQEC'92 Konferenz (Wien, Austria, in International Conference on Quantum Electronics Technical Digest Series 1992, Vol. 9, p. 46, 14.-19.6.1992) (1992)
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- W. Vogel, R. Blatt, *Homodyne Intensitätskorrelationen in der Resonanzfluoreszenz*, in *Verhandl. DPG (VI) 27, 1402* (1992) (1992)
- J. Walz, M. Schubert, I. Siemers, W. Neuhauser, R. Blatt, *Ion Storage in the RF-Octupole Trap*, Beitrag zur QELS'92 Konferenz (Anaheim, Ca, USA, in Quantum Electronics and Laser Science Conference 1992 Technical Digest Series 13 (Optical Society of America, Washington, D.C., 1992), p. 66, 10.-15.5.1992) (1992)
- J. Walz, M. Schubert, I. Siemers, W. Neuhauser, R. Blatt, *Stabilitätsuntersuchungen und räumliche Verteilung von gespeicherten Ba+-Ionen in einer Achtpol-Falle*, in *Verhandl. DPG (VI) 27, 1205* (1992) (1992)

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- H. Harde, J. Hattendorf-Ledwoch, H. Lehmitz, R. Blatt, *Self-induced Zeeman coherences in trapped Yb+ ions*, *Appl. Phys. B* 53, 131 (1991)

#### Colloquiums

- R. Blatt, *Spektroskopie mit einzelnen Atomen*, Colloquium (Universität Göttingen, Germany, 22.4.1991) (1991)
- R. Blatt, *Spektroskopie mit einzelnen Atomen*, Colloquium (Universität Konstanz, Germany, 3.5.1991) (1991)

#### Invited Talks

- R. Blatt, *Frontiers in Spectroscopy with Single Trapped Ba+ Ions*, eingeladener Vortrag auf der Gordon-Conference on Atomic Physics (Wolfeborough, New Hampshire, USA, 1.-5.7.1991) (1991)
- R. Blatt, *Spektroskopie mit einzelnen Atomen*, eingeladener Vortrag auf dem Lähnwitz-Seminar der Hochschule Güstrow (Lähnwitz, Mecklenburg, Germany, 11.-14.6.1991) (1991)
- M. Schubert, I. Siemers, R. Blatt, W. Neuhauser, P. E. Toschek, *Zeeman Effect of a Single Three-Level Ion and the Anti-Bunching property of Ionic Fluorescence*, European Research Conference (Davos, Schweiz, 09/1991) (1991)
- I. Siemers, M. Schubert, R. Blatt, W. Neuhauser, P. E. Toschek, *Zeeman Effect of a Single Three-Level Ion and the Anti Bunching property of Ionic Fluorescence*, Beitrag zur III. European Quantum Electronics Conference, EQEC (Edinburgh, UK, 22.-29.8.1991) (1991)

#### Seminar Talks

- R. Blatt, *Frequency Standards with Trapped Yb+ions*, Seminar Talk (NASA Jet Propulsion Laboratory, Pasadena, Ca., USA, 9.7.1991) (1991)
- R. Blatt, *Spectroscopy and Quantum Optics with Single Trapped Ba+ ions*, Seminar Talk (Caltech, Pasadena, Ca., USA, 8.7.1991) (1991)
- R. Blatt, *Spectroscopy with single ions*, Seminar Talk (NIST Gaithersburg, MD, USA, 2.12.1991) (1991)
- R. Blatt, *Spectroscopy with single trapped ions*, Seminar Talk (JILA, University of Colorado, Boulder, Co., USA, 14.11.1991) (1991)

- R. Blatt, *Spectroscopy with trapped Ba+ and Yb+ ions*, Seminar Talk (NRC, Ottawa, Kanada, 6.5.1991) (1991)
- R. Blatt, *Spectroscopy with trapped Ba+ ions*, Seminar Talk (NIST Boulder, Co., USA, 9.5.1991) (1991)
- R. Blatt, *Spectroscopy with trapped Ba+ ions*, Seminar Talk (Imperial College, London, UK, 17.6.1991) (1991)
- R. Blatt, *Spektroskopie von Dunkelresonanzen in einzelnen Atomen*, Seminar Talk (Max-Planck-Institut für Kernphysik, Heidelberg, Germany, 13.9.1991) (1991)
- R. Blatt, *Squeezing of resonance fluorescence with trapped ions*, Seminar Talk (JILA, University of Colorado, Boulder, Co., USA, 25.11.1991) (1991)

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- B. Coordt, I. Siemers, M. Schubert, R. Blatt, *Dynamics of Ion Clouds in Paul Traps: Influence of Buffer Gases*, Vortrag zur QELS'91 Konferenz (Baltimore, Md., USA, in Quantum Electronics and Laser Science 1991 Technical Digest Series 11, (Optical Society of America, Washington, D.C. 1991), p. 170, 12.-17.5.1991) (1991)
- B. Coordt, I. Siemers, M. Schubert, R. Blatt, *Einfluss von Stößen auf die Dynamik gespeicherter Ionen*, in *Verhandl. DPG (VI) 26, 680 (1991)* (1991)
- K. Cord-Ruwisch, V. Enders, R. Casdorff, W. Neuhauser, R. Blatt, *Seitenbandspektren gespeicherter YB+ Ionen*, in *Verhandl. DPG (VI) 26, 679 (1991)* (1991)
- V. Enders, Ph. Courteille, H. Gerdau, B. Moritz, R. Blatt, W. Neuhauser, P. E. Toschek, *Einfluss der Magnetfeldorientierung auf Mikrowellenspektren gespeicherter Ionen*, in *Verhandl. DPG (VI) 26, 679 (1991)* (1991)
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- I. Siemers, M. Schubert, R. Blatt, W. Neuhauser, P. E. Toschek, *Hochauflösende Messung des Zeeman-Effekts der Dunkelresonanz eines einzelnen Ba+ Ions*, in *Verhandl. DPG (VI) 26, 679 (1991)* (1991)
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- M. Schubert, I. Siemers, R. Blatt, *Kinetic energy and spatial width of ion clouds in Paul traps*, *Appl. Phys.* B51, 414 (1990)

#### Colloquiums

- R. Blatt, *Quantensprünge in Atomen - kann man sie beobachten?*, Colloquium (PH Güstrow, 20.6.1990) (1990)
- R. Blatt, *Spektroskopie mit einzelnen Atomen*, Colloquium (Universität Bielefeld, Germany, 21.5.1990) (1990)

#### Invited Talks

- R. Blatt, *Fundamental Systems in Quantum Optics*, Summer School (Les Houches, France, 25.6.-27.7.1990) (1990)
- R. Blatt, R. Casdorff, V. Enders, W. Neuhauser, P. E. Toschek, *Frequenznormale mit gespeicherten Yb+ Ionen*, DFG Kolloquium (Rüper, Wendeburg, Germany, 13.-15.6.1990) (1990)

#### Seminar Talks

- R. Blatt, *Spectroscopy with trapped Ba+ and Yb+ ions*, Seminar Talk (Imperial College, London, UK, 11.6.1990) (1990)

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- R. Casdorff, V. Enders, R. Blatt, W. Neuhauser, P. E. Toschek, *Frequenznormal mit gespeicherten Yb+-Ionen*, in *Verhandl. DPG (VI) 25 (1990)* (1990)
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- I. Steiner, V. Enders, F. Elsner, W. Neuhauser, P. E. Toschek, R. Blatt, J. Helmcke, *Ein Farbstoff-Ringlaser bei 649 nm mit Kurzzeitstabilität im Hz-Bereich*, in *Verhandl. DPG (VI) 25 (1990)* (1990)

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- R. Blatt, *Spektroskopie mit einzelnen Atomen*, Colloquium (Universität Göttingen, Germany, 11/1989) (1989)
- R. Blatt, *Spektroskopie mit einzelnen Ionen und Elektronen*, Colloquium (DESY Hamburg, Germany, 12/1989) (1989)

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- R. Casdorff, V. Enders, R. Blatt, W. Neuhauser, P. E. Toschek, *Progress Towards a Frequency Standard Based on Trapped Yb<sup>+</sup> Ions*, Proc. Int. Symp. on Electromagn. Metrology (1989)
- Th. Sauter, H. Gilhaus, W. Neuhauser, R. Blatt, P. E. Toschek, *Nonlinear Effects in Trapped Three-Level Ions*, Frequency Standards and Metrology (Ed.: A. De Marchi), 300 (1989)

### Seminar Talks

- R. Blatt, *A Hz Linewidth Dye Laser for Probing Trapped Ba Ions*, Seminar Talk (NPL Teddington, UK, 05/1989) (1989)
- R. Blatt, *Frequenznormale mit gespeicherten Ionen*, Seminar Talk (MPQ Garching, Germany, 02/1989) (1989)
- R. Blatt, *Frequenznormale mit gespeicherten Yb<sup>+</sup>-Ionen*, Tankum-Seminar (Isenbüttel, 06/1989) (1989)
- R. Blatt, *Spectroscopy on laser cooled trapped ions*, Seminar Talk (The Imperial College, University of London, 05/1989) (1989)
- R. Blatt, *Spectroscopy on laser cooled trapped ions*, Seminar Talk (NIST Gaithersburg, MD, USA, 09/1989) (1989)
- R. Blatt, *Spectroscopy with trapped Yb<sup>+</sup> and Ba<sup>+</sup> ions*, Seminar Talk (NIST Boulder, Co., USA, 09/1989) (1989)
- R. Blatt, *Spektroskopie mit einzelnen Atomen*, Seminar Talk (Universität Bonn, Germany, 10/1989) (1989)

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- R. Casdorff, V. Enders, R. Blatt, W. Neuhauser, P. E. Toschek, *Optisches Pumpen von Yb<sup>+</sup> in einer RF-Ionenfalle*, Beitrag zur Frühjahrstagung der DPG (Essen, Germany, Bonn, Germany, in Verhandl. DPG (VI) 24 (1989), 1989) (1989)
- H. Gilhaus, Th. Sauter, W. Neuhauser, R. Blatt, P. E. Toschek, *Induzierter Licht-Rückstoss*, Beitrag zur Frühjahrstagung der DPG (Bonn, Germany, in Verhandl. DPG (VI) 24 (1989), 1988) (1989)

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- R. Blatt, G. Lafyatis, W. D. Phillips, S. Stenholm, D. J. Wineland, *Cooling in traps*, Physica Scripta T22, 216 (1988)
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- Th. Sauter, H. Gilhaus, I. Siemers, R. Blatt, W. Neuhauser, P. E. Toschek, *On the Photo-Dynamics of Single Ions in a Trap*, Z. Physik D 10, 153 (1988)
- I. Siebers, R. Blatt, Th. Sauter, W. Neuhauser, *Dynamics of Ion Clouds in Paul Traps*, Phys. Rev. A 38, 5121 (1988)
- I. Siemers, R. Blatt, T. Sauter, W. Neuhauser, *The kinetic energy of ion clouds in Paul traps*, Physica Scripta T22, 240 (1988)

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- R. Blatt, *Die Hochfrequenz-Falle und ihre Anwendung in der Atom-Spektroskopie*, Colloquium (Universität Münster, Germany, 12/1988) (1988)

### Invited Talks

- R. Blatt, I. Siemers, M. Schubert, T. Sauter, W. Neuhauser, *The Dynamics of Ion Clouds in Paul Traps: Implications for Frequency Standard Applications*, in Proceedings Topical Meeting on Laser Materials and Laser Spectroscopy, p. 384, World Scientific, Singapore 1989 (Shanghai, China, 25.-27.7.1988) (1988)
- H. Lehmitz, J. Hattendorf-Ledwoch, R. Blatt, H. Harde, *Observation of Complete Population Trapping in an Excited State of Yb ions*, eingeladener Vortrag auf der IQEC-Konferenz, XVI. IQEC Digest of Technical Papers, p. 592, Tokio 1988 (Tokyo, Japan, 18.-21.7.1988) (1988)
- H. Lehmitz, J. Hattendorf-Ledwoch, R. Blatt, H. Harde, *Spectroscopic Studies on Trapped Yb Ions*, eingeladener Vortrag auf der 1. European Quantum Electronics Conference, EQEC (Hannover, Germany, 12.-16.10.1988) (1988)

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- H. Lehmitz, J. Hattendorf-Ledwoch, R. Blatt, H. Harde, *Self Induced Zeeman Coherences in Trapped Ions*, Beitrag zur EGAS Konferenz (Graz, Austria, 11.-16.6.1988) (1988)
- Th. Sauter, H. Gilhaus, W. Neuhauser, R. Blatt, P. E. Toschek, *Kinetic Multi-Stability of a Single Trapped Ion*, Beitrag zur 11. International Conference on Atomic Physics (ELICAP) (Paris, France, 4.-8.7.1988) (1988)

## Seminar Talks

- R. Blatt, *Spektroskopie mit einzelnen gespeicherten Ionen*, Seminar Talk (Inst.f. Angewandte Physik, Universität Hamburg, Germany, 12/1988) (1988)

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- R. Blatt, I. Siemers, M. Schubert, T. Sauter, W. Neuhauser, *Kinetic Energy and Spatial Distribution of Ion Clouds in Paul Traps*, in Proceedings of the 4th Symp. on Freq. Standards and Metrology, p. 453, Springer-Verlag, Berlin Heidelberg, 1989 (Ancona, Italy, 09/1988) (1988)
- H. Gilhaus, R. Blatt, W. Neuhauser, P. E. Toschek, *Photo Dynamics of a Single Trapped Three-Level Ion*, Beitrag zur VI. Conference on Coherence and Quantum Optics (Rochester, New York, USA, 26.-28.6.1988) (1988)
- H. Gilhaus, Th. Sauter, I. Siemers, W. Neuhauser, R. Blatt, P. E. Toschek, *Bistabilität der Bahn eines einzelnen gespeicherten und gekühlten Ions*, Beitrag zur Frühjahrstagung der DPG (Bonn, Germany, in Verhandl. DPG (VI) 23, A-16.5, (1988), 1988) (1988)
- J. Hattendorf, H. Lehmitz, R. Blatt, H. Harde, *Nachweis der Mikro- und Makrobewegung von Ionen in einer RF-Ionenfalle über selbstinduzierte Zeeman-Kohärenzen*, Beitrag zur Frühjahrstagung der DPG (Bonn, Germany, in Verhandl. DPG (VI) 23, A-16.4, (1988), 1988) (1988)
- H. Lehmitz, J. Hattendorf, R. Blatt, H. Harde, *Beobachtung des shelving in Yb-Ionen*, Beitrag zur Frühjahrstagung (Bonn, Germany, in Verhandl. DPG (VI) 23, A-26.1, (1988), 1988) (1988)
- H. Lehmitz, J. Hattendorf-Ledwoch, R. Blatt, H. Harde, *Observation of an Extremely Long Living Metastable State in YbII*, Beitrag zur EGAS Konferenz (Graz, Austria, 11.-16.6.1988) (1988)
- M. Schubert, I. Siemers, R. Blatt, W. Neuhauser, *Zur Linienform des Anregungsspektrums gespeicherter Ionen*, Beitrag zur Frühjahrstagung der DPG (Bonn, Germany, in Verhandl. DPG (VI) 23, A-16.6, (1988), 1988) (1988)
- I. Siemers, M. Schubert, R. Blatt, W. Neuhauser, *Lokalisierte 4-Wellen-Mischung in einer Ionenwolke*, Beitrag zur Frühjahrstagung der DPG (Bonn, Germany, in Verhandl. DPG (VI) 23, A-16.7, (1988), 1988) (1988)

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## Colloquiums

- R. Blatt, *Quantensprünge in gespeicherten Ionen*, Colloquium (ETH Zürich, Schweiz, 06/1987) (1987)
- R. Blatt, *Sauts Quantiques - Observation des périodes d'obscurité en fluorescence atomique*, Colloquium (Collège de France et École Normale Supérieure, Paris, France, 03/1987) (1987)

## Invited Talks

- R. Blatt, *Perspektiven für mögliche zukünftige Frequenznormale mit gespeicherten Yb+-Ionen*, Beitrag zur PTB Tankumsee-Seminar (Isenbüttel, 1987) (1987)
- R. Casdorff, R. Blatt, P. E. Toschek, *Ordered Structures of Ion Clouds in Paul Traps*, Beitrag zum Symposium "Physics of Stored and Trapped Particles", PSTP-87 (Stockholm, Sweden, 15.-18.6.1987) (1987)
- R. Casdorff, R. Blatt, P. E. Toschek, *Ordered Structures of Ions Stored in a RF-Trap*, Beitrag zum Seminar "Fundamentals in Quantum Optics II", Lecture Notes in Physics 282, p. 278, Springer-Verlag, Berlin 1987 (Obergrugl, Ötztal, Austria, 1987) (Ed.: F. Ehlotzky) (1987)

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- Th. Sauter, R. Blatt, W. Neuhauser, P. E. Toschek, *'Quantum Jumps' Observed in the Fluorescence of a Single Ion*, AIP Optical Science and Engineering Series 6: Advances in Laser Science II (Eds.: M. Lapp, W. C. Stwalley, G. A. Kennedy-Wallace), 337 (1987)
- Th. Sauter, R. Blatt, W. Neuhauser, P. E. Toschek, *Quantum Jumps Observed in Single-Ion Fluorescence*, Fundamentals of Quantum Optics II, Lecture Notes in Physics 282 (Ed.: F. Ehlotzky), 111 (1987)
- Th. Sauter, W. Neuhauser, R. Blatt, P. E. Toschek, *Quantum Jumps and Related Phenomena of Single Ions and Small Ion Clouds*, Laser Spectroscopy VIII (Eds.: S. Svanberg, W. Persson), 121 (1987)

## Seminar Talks

- R. Blatt, *Die Hochfrequenz-Ionenfalle und ihr Einsatz zur Beobachtung von Quantensprüngen*, Seminar Talk (Universität der Bundeswehr Hamburg, Germany, 11/1987) (1987)
- R. Blatt, *Die Hochfrequenz-Ionenfalle und ihre Anwendungen*, Seminar Talk (Universität Innsbruck, Austria, 10/1987) (1987)
- R. Blatt, *Dynamics of Ion Clouds in RF Traps*, Seminar Talk (University of Washington, Seattle, USA, 05/1987) (1987)
- R. Blatt, *Energy distribution functions in RF Traps*, Seminar Talk (NBS, Boulder, Co., USA, 05/1987) (1987)
- R. Blatt, *The RF (Paul) - Trap and its Application*, Seminar Talk (LANL, Los Alamos, New Mexico, USA, 07/1987) (1987)
- R. Blatt, *Visuelle Beobachtung von Quantensprüngen*, Seminar Talk (Universität Hamburg, Germany, 04/1987) (1987)
- R. Blatt, *Visuelle Beobachtung von Quantensprüngen*, Seminar Talk (Universität Hamburg, Germany, 04/1987) (1987)

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- J. Bialas, R. Blatt, W. Neuhauser, P. E. Toschek, *Modulation Transfer Spectroscopy: Limits of Sensitivity*, Beitrag zur IQEC-Konferenz (Baltimore, Md., USA, in XV. IQEC Technical Digest, p. 198, 27.4.-1.5.1987) (1987)
- R. Casdorff, R. Blatt, A. Lindner, P. E. Toschek, *Räumliche Struktur von gespeicherten Ionen*, Beitrag zur Frühjahrstagung der DPG (Göttingen, Germany, in Verhandl. DPG (VI) 22, III, A-13.3, 1987) (1987)
- T. Sauter, R. Blatt, W. Neuhauser, P. E. Toschek, *Quantum Jumps of a Single Ion*, Beitrag zur IQEC-Konferenz (Baltimore, Md., USA, in XV. IQEC Technical Digest, p. 136, 27.4.-1.5.1987) (1987)
- I. Siemers, R. Blatt, T. Sauter, W. Neuhauser, P. E. Toschek, *Experimente zur Dynamik gespeicherter Ionen im Paul-Käfig*, Beitrag zur Frühjahrstagung der DPG (Göttingen, Germany, in Verhandl. DPG (VI) 22 (1987), III, A-13.4, 1987) (1987)

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- R. Blatt, W. Ertmer, P. Zoller, J. L. Hall, *Atomic-beam cooling: A simulation approach*, Phys. Rev. A 34, 3022–3033 (1986)
- R. Blatt, P. Zoller, G. Holzmüller, I. Siemers, *Brownian motion of a parametric oscillator: A model for ion confinement in radio frequency traps*, Zeitschrift für Physik D; Atoms, Molecules and Clusters 4, 121 - 126 (1986)
- J. Bialas, R. Blatt, W. Neuhauser, P. E. Toschek, *Ultrasensitive Detection of Light Absorption by Few Ions*, Opt. Commun. 59, 27 (1986)
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- Th. Sauter, W. Neuhauser, R. Blatt, P. E. Toschek, *Observation of Quantum Jumps*, Phys. Rev. Lett. 57, 1696 (1986)

## Invited Talks

- J. Bialas, R. Blatt, W. Neuhauser, P. E. Toschek, *Modulation Transfer Spectroscopy: Limits of Sensitivity*, eingeladenener Vortrag auf dem Deutsch-Sowjetischen Laser-Seminar (Mainz, Germany, 6.-10.10.1986) (1986)
- R. Blatt, *Laser Cooling and Trapping*, Summer School (Helsinki, Finnland, 07/1986) (1986)
- Th. Sauter, R. Blatt, W. Neuhauser, P. E. Toschek, *'Quantum Jumps' Observed in the Fluorescence of a Single Ion*, eingeladenener Vortrag auf dem Deutsch-Sowjetischen Laser-Seminar (Mainz, Germany, 6.-10.10.1986) (1986)
- T. Sauter, W. Neuhauser, R. Blatt, P. E. Toschek, *Observation of 'Quantum Jumps'*, eingeladenener Vortrag auf der IQEC-Konferenz, post-deadline abstracts (San Francisco, Calif., USA, post-deadline abstracts, 9.-13.6.1986) (1986)

## Proceedings

- J. Bialas, R. Blatt, W. Neuhauser, P. E. Toschek, *Cross Saturated Side-Band Absorption: The Limits of Detectivity*, Proceedings of the 1. ILS-Conference, Dallas 1985 in AIP Optical Science and Engineering Series 6: Advances in Laser Science I (Eds.: M. Lapp, W. C. Stwalley) (1986)

## Seminar Talks

- R. Blatt, *Ionenspeicherung: Grundlagen und Anwendung*, Seminar Talk (Universität Hannover, Germany, 05/1986) (1986)
- R. Blatt, *Optischer Überlagerungsnachweis für gespeicherte Ionen*, Seminar Talk (Universität Mainz, Germany, 04/1986) (1986)
- R. Blatt, *Quantensprünge an einzelnen Ionen*, Seminar Talk (Universität Mainz, Germany, 10/1986) (1986)

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- J. Bialas, R. Blatt, W. Neuhauser, P. E. Toschek, *Kreuzsättigende Seitenband-Absorption: Die Grenzen der Nachweisbarkeit*, Beitrag zur Frühjahrstagung der DPG (Heidelberg, Germany, in Verhandl. d. DPG (VI) 21, 420 (1986), 1986) (1986)
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- R. Blatt, W. Ertmer, J. L. Hall, *Atomic Beam Cooling by Counterpropagating Laser Radiation*, Acta Physica Austriaca 57, 151 (1985)

- W. Ertmer, R. Blatt, J. L. Hall, M. Zhu, *Laser Manipulation of Atomic Beam Velocities: Demonstration of Stopped Atoms and Velocity Reversal*, Phys. Rev. Lett. 54, 996 (1985)

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- R. Blatt, W. Ertmer, J. L. Hall, M. Zhu, *Laser Cooling of an Atomic Beam*, Beitrag zur Gordon-Conference on Atomic Physics (Wolfeborough, New Hampshire, USA, 1985) (1985)
- W. Ertmer, R. Blatt, J. L. Hall, M. Zhu, *Laser Cooling of an Atomic Beam: Demonstration of Stopped Atoms and Velocity Reversal*, eingeladener Vortrag auf dem Deutsch-Sowjetischen Laser-Seminar (Moskau, UdSSR, 1985) (1985)

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- R. Blatt, W. Ertmer, J. L. Hall, M. Zhu, *Laser Cooling of an Atomic Beam*, Beitrag zur 2. ECAMP-Konferenz (Amsterdam, 2nd ECAMP, Book of Abstracts, Eds. A.E. de Vries and M.J. van der Wiel, p. 31, 1985) (1985)
- R. Blatt, E. Matthias, *State Selection and Trapping of High- $n$  Neutral Rydberg Atoms By Inhomogeneous Magnetic Fields*, Beitrag zur 2. ECAMP-Konferenz (Amsterdam, 2nd ECAMP, Book of Abstracts, Eds. A.E. de Vries and M.J. van der Wiel, p. 248, 1985) (1985)
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- W. Ertmer, R. Blatt, J. L. Hall, M. Zhu, "*Laser Manipulation of Atomic Beam Velocities: Demonstration of Stopped Atoms and Velocity Reversal*", Beitrag zum Seminar "Fundamentals of Laser Interactions", Obergurgl, Ötztal, Austria, Lecture Notes in Physics 229, 309 (1985)

#### Seminar Talks

- R. Blatt, *Kinetic Energy and 4-Wave-Mixing Results in Ba<sup>+</sup>*, Seminar Talk (NBS, Boulder, Co., USA, 07/1985) (1985)
- R. Blatt, *Laserkühlung von Atomstrahlen und gespeicherten Ionen als Grundlage für mögliche Frequenznormale*, Seminar Talk (PTB, Braunschweig, Germany, 06/1985) (1985)

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- W. Becker, R. Blatt, G. Werth, *High Resolution Microwave Spectroscopy on Trapped Ba<sup>+</sup> Ions PMFCII*, NBS Spec. Publ. 617, 99 (1984)
- R. Blatt, W. Ertmer, J. L. Hall, *Cooling of an Atomic Beam with Frequency Sweep Techniques* Progr., Quant. Electr. 8, 237 (1984)
- W. Ertmer, R. Blatt, J. L. Hall, *Candidate Atoms and Ions for Frequency Standards Research Using Laser Radiative Cooling Techniques*, Progr. Quant. Electr. 8, 249 (1984)

##### Seminar Talks

- R. Blatt, *Laserkühlen von Atomstrahlen*, Seminar Talk (Universität Hamburg, Germany, 03/1984) (1984)
- R. Blatt, *Laserkühlen von Atomstrahlen*, Seminar Talk (Max-Planck-Institut für Quantenoptik, Garching, Germany, 05/1984) (1984)

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- R. Blatt, W. Ertmer, J. L. Hall, *Kühlung eines Atomstrahls durch einen gegenläufigen Laserstrahl: Experiment*, Beitrag zur Frühjahrstagung der DPG (Giessen, Germany, in Verhandl. d. DPG (VI) 19, 725 (1984), 1984) (1984)
- R. Blatt, W. Ertmer, J. L. Hall, *Kühlung eines Atomstrahls durch einen gegenläufigen Laserstrahl: Monte-Carlo-Simulation*, Beitrag zur Frühjahrstagung der DPG (Giessen, Germany, in Verhandl. d. DPG (VI) 19, 726 (1984), 1984) (1984)

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- R. Blatt, H. Schnatz, G. Werth, *Determination of the 171Yb<sup>+</sup> Ground-State Hyperfine Separation*, Z. Phys. A 312, 143 (1983)

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- R. Blatt, W. Ertmer, J. L. Hall, *Atomic Beam Cooling by Frequency Sweeping*, Symposium on Atomic Spectroscopy (Berkeley, Ca., USA, 1983) (1983)
- R. Blatt, W. Ertmer, J. L. Hall, *Laser Cooling of Atomic Beams by Frequency Chirping*, eingeladener Vortrag auf der Gordon-Conference on Atomic Physics, Colby Sawyer College (New Hampshire, USA, 1983) (1983)

##### Seminar Talks

- R. Blatt, *Highresolution Hyperfine Spectra of Trapped Ba<sup>+</sup> and Yb<sup>+</sup> Ions*, Seminar Talk (Harvard University, Cambridge, Ma., USA, 04/1983) (1983)
- R. Blatt, *Laserkühlen von Atomstrahlen*, Seminar Talk (Universität Mainz, Germany, 11/1983) (1983)
- R. Blatt, *Trapped Ions and Laser Cooled Atoms - Prospects for Frequency Standard Applications*, Seminar Talk (NRC, Ottawa, Kanada, 09/1983) (1983)

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- R. Blatt, H. Schnatz, G. Werth, *Höchstauflösende Mikrowellenspektroskopie an gespeicherten Yb<sup>+</sup> Ionen*, Beitrag zur Frühjahrstagung der DPG (Regensburg, Germany, in Verhandl. d. DPG (VI) 18, 226 (1983), 1983) (1983)

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- R. Blatt, H. Schnatz, G. Werth, *Ultrahigh Resolution Microwave Spectroscopy on Trapped  $171\text{Yb}^+$  Ions*, Phys. Rev. Lett. 48, 1601 (1982)
- R. Blatt, G. Werth, *Precision Determination of the Ground-State Hyperfine Splitting in  $137\text{Ba}^+$  Using the Ion Storage Technique*, Phys. Rev. A 25, 1476 (1982)

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- R. Blatt, H. Schnatz, G. Werth, *Ultrahigh Resolution Microwave Spectroscopy on Trapped  $171\text{Yb}^+$  Ions*, Beitrag zur 14. EGAS-Conference (Liege, Belgium, 1982) (1982)

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- R. Blatt, H. Schnatz, G. Werth, *Ultrahigh Resolution Hyperfine Spectra from Trapped  $171\text{Yb}^+$  Ions*, Beitrag zur 8. ICAP-Conference (Göteborg, Sweden, 1982) (1982)

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- R. Blatt, G. Werth, *Precision Determination of the Ground State Hfs in  $137\text{Ba}^+$* , Beitrag zur 12. EGAS-Conference (Pisa, Italy, 1980) (1980)

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- R. Blatt, U. Schmeling, G. Werth, *On The Sensitivity of Ion Traps for Spectroscopic Applications*, Appl. Phys. 20, 295 (1979)

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- W. Becker, R. Blatt, G. Werth, *Ein empfindliches Verfahren zur Spektroskopie kleiner Ionenmengen*, Beitrag zur Frühjahrstagung der DPG (Berlin, Germany, in Verhandl. DPG (VI) 14, 1210 (1979), 1979) (1979)