

CV Prof. Jörg Schmiedmayer

Date of Birth: 13.08.1960
VIENNA, AUSTRIA

Current position: PROFESSOR OF PHYSICS (CHAIR)
TU-Wien
Atominstytut der Österreichischer Universitäten
Stadionallee 2, A-1020 Wien

Education:
1970 – 1978 Humanistisches Gymnasium, Vienna
1978 – 1983 Study: physics and astronomy (TU-Wien, Univ. Wien)
Graduated Dipl. Ing. Technische Physik (first honours)
1984 – 1987 PhD. Experimental physics, TU-Wien (first honours)
1987 Habilitation: experimental physics (Univ. Innsbruck)

Professional Experience:
1983 – 1984 Researcher: EHS Experiment CERN
1985 – 1990 Assistent, Institut für Kernphysik, TU-Wien
1990 – 1991 Postdoc, Harvard University, Cambridge MA U.S.A.
1992 – 1995 Postdoc + Visiting Scientist, MIT, Cambridge MA U.S.A.
1993 – 1997 Assistent, Institut f. Experimentalphysik, Univ. Innsbruck
1997 – 2000 Ao Prof (with tenure) Universität Innsbruck
2000 – 2006 Full professor and Chair Chair of Experimental Physics,
Physikalisches Institut, Universität Heidelberg
2003 – 2006 Guestprofessor Peking University, Beijing, China
2006 Full professor and Chair of Experimental Physics,
Atominstytut der Österreichischen Universitäten, TU-Wien

Research Fellowships:
1981 CERN summer research student fellowship
1990-1992 Erwin Schrödinger Fellowship (FWF)
1994-1997 APART Fellowship, Austrian Academy of Science

Prizes:
1978 2nd prize at the *Phillips European Contest for Young Scientists and Inventors*
1988 *Viktor Hess prize* (Austrian Physical Society)
1992 *Excellence in Research and Development award:*
Oak Ridge National Laboratory
1996 *European Optics Prize*, European Optical Society
(with A. Zeilinger und colleagues)
2006 Wittgenstein Prize

Selected Publications:

Atom Chips

- *Breakdown of integrability in a quasi-one-dimensional ultracold bosonic gas*
I. Mazets, T. Schumm, J. Schmiedmayer; Phys. Rev. Lett. **100**, 210403 (2008);
- *Probing quantum and thermal noise in an interacting many-body system*
S. Hofferberth, I. Lesanovsky, T. Schumm, J. Schmiedmayer, A. Imambekov, V. Gritsev, E. Demler; Nature Physics **4**, 489-495 (2008);
- *Long-Range Order in Electronic Transport through Disordered Metal Films*;
S. Aigner, L. Della Pietra, Y. Japha, O. Entin-Wohlman, T. David, R. Salem, R. Folman, J. Schmiedmayer; Science **319**, 1226 (2008)
- *Non-equilibrium coherence dynamics in one-dimensional Bose gases*
S. Hofferberth, I. Lesanovsky, B. Fischer, T. Schumm, J. Schmiedmayer; Nature **449**, 324 (2007);
- *Radio-frequency dressed state potential for manipulation neutral atoms* ;
S. Hofferberth, I. Lesanovsky, B. Fischer, J. Verdu, J. Schmiedmayer; Nature Physics **2** 678 (2006).
- *Detecting magnetically guided atoms with an optical cavity*;
A. Haase, B. Hessmo, J. Schmiedmayer; Opt. Lett. **31**, 268 (2006)
- *Matter wave interferometry in a double well on an atom chip*;
T. Schumm, S. Hofferberth, L. M. Andersson, S. Wildermuth, S. Groth, I. Bar-Joseph, J. Schmiedmayer, P. Krüger; Nature Physics **1**, 57 (2005)
- *Microscopic magnetic Field Imaging*;
S. Wildermuth, S. Hofferberth, I. Lesanovsky, E. Haller, M. Andersson, S. Groth, I. Bar-Joseph, P. Krüger, J. Schmiedmayer, Nature **435**, 440 (2005)
- *Ultracold atoms in optical lattices with random on-site interactions*;
H. Gimperlein, S. Wessel, J. Schmiedmayer, L. Santos; Phys. Rev. Lett. **95**, 170401 (2005)
- *Atom Chips: Fabrication and Thermal Properties*;
S. Groth, P. Krüger, S. Wildermuth, R. Folman, T. Fernholz, D. Mahalu, I. Bar-Joseph, J. Schmiedmayer; Appl. Phys. Lett **85**, 2980 (2004)
- *Trapping and manipulating neutral atoms with electrostatic fields*;
P. Krüger, X. Luo, M. Klein, K. Brugger, A. Haase, S. Wildermuth, S. Groth, I. Bar-Joseph, R. Folman, J. Schmiedmayer; Phys.Rev.Lett **91**, 233201 (2003)
- *Towards integrated optical non-destructive single atom detectors*;
P. Horak, B.G. Klappauf, A. Haase, R. Folman, J. Schmiedmayer P. Domokos, E.A. Hinds, Phys. Rev. A. **67**, 043806 (2003);
- *Quantum gates with neutral atoms: Controlling collisional interactions in time dependent traps*
T. Calarco, E.A.Hinds, D. Jaksch, J. Schmiedmayer, J. I. Cirac, P. Zoller Phys. Rev. A **61**, 022304 (2000)
- *A Beam Splitter for Guided Atoms on an Atom Chip*
D. Cassettari, B. Hessmo, R. Folman, T. Maier, J. Schmiedmayer; Phys. Rev.Lett. **85**, 5483 (2000).
- *Controlling Cold Atoms using Nanofabricated Surfaces: Atom Chips*
R. Folman, P. Krüger, D. Cassettari, B. Hessmo, T. Maier, J. Schmiedmayer; Phys. Rev. Lett. **84**, 4749 (2000).
- *Guiding Neutral Atoms with a Wire*;
J. Denschlag, D. Cassettari, J. Schmiedmayer; Phys.Rev.Lett. **82**, 2014 (1999).
- *Probing a Singular Potential with Cold Atoms: An Atom and a Charged Wire*;
J. Denschlag, G. Umshaus, J. Schmiedmayer; Phys.Rev.Lett. **81**, 737 (1998).
- *Quantum Wires and Quantum Dots for Neutral Atoms* ;
J. Schmiedmayer; European Physics Journal D **4**, 57 (1998).
- *Guiding and Trapping a Neutral Atom on a Wire*;
J. Schmiedmayer; Phys.Rev. **A52**, R13 (1995).
- *Guided Matter Waves, an Atom and a Current*;
J. Schmiedmayer; Proceedings of IQEC'92 (1992).

Quantum Memory

- *Experimental demonstration of a BDCZ quantum repeater node*
Z-S Yuan, Y-A Chen, B Zhao, S Chen, J Schmiedmayer, J-W Pan, Nature **454**, 1098 (2008).
- *Multistage entanglement swapping*
A. Goebel, C. Wagenknecht, Q. Zhang, Y-A Chen, K. Chen, J. Schmiedmayer, J-W Pan Phys. Rev. Lett. **101**, 080403 (2008)
- *Memory-built-in quantum teleportation with photonic and atomic qubits*;
Y-A. Chen, S. Chen, Z-S. Yuan, Bo Zhao, C-S. Chuu, J. Schmiedmayer, J-W. Pan; Nature Physics **4**, 103-107 (2008)
- *A Robust Atom-Photon Entanglement Source for Quantum Repeaters*
S. Chen, Y-A Chen, Bo Zhao, Z-S Yuan, J. Schmiedmayer, J-W Pan; Phys. Rev. Lett. **99**, 180505 (2007)
- *Robust long-distance quantum communication with atomic ensembles and linear optics*
Bo Zhao, Z-B Chen, Y-A Chen, J Schmiedmayer, J-W Pan; Phys. Rev. Lett. **98**, 240502 (2007)
- *Synchronized Independent Narrow-band Single Photons and Efficient Generation of Photonic Entanglement* ;
Z-S Yuan, Y-A Chen, S. Chen, Bo Zhao, M. Koch, T. Strassel, Y. Zhao, G-J Zhu, J. Schmiedmayer, J-W Pan; Phys. Rev. Lett. **98**, 180503 (2007)
- *Deterministic and Storable Single-Photon Source Based on Quantum Memory*;
S. Chen, Y-A Chen, T. Strassel, Z-S Yuan, B Zhao, J. Schmiedmayer, J-W Pan; Phys. Rev. Lett **97**, 173004 (2006)
- *Experimental quantum teleportation of a two-qubit composite system*;
Q. Zhang, A. Goebel, C. Wagenknecht, Ya Chen, B. Zhao, T. Yang, A. Mair, J. Schmiedmayer, J-W Pan; Nature Physics **2** 678 (2006)

Matter wave optics

- *Tailored Complex Potentials and Friedel's law Atom Optics;*
C. Keller, R. Abfalterer, St. Bernet, M. Oberthaler, J. Schmiedmayer, A. Zeilinger; Phys.Rev.Lett. **79**, 3327 (1997).
- *Coherent Frequency Shift of Atomic Matter Waves;*
St. Bernet, M. Oberthaler, R. Abfalterer, J. Schmiedmayer, A. Zeilinger; Phys.Rev.Lett. **77**, 5160 (1996).
- *Atom Waves in Light Crystals;*
M. Oberthaler, St. Bernet, R. Abfalterer, J. Schmiedmayer, A. Zeilinger; Phys.Rev.Lett. **77**, 4980 (1996).
- *Photon Scattering from Atoms in an Atom Interferometer: Coherence Lost and Regained;*
M. Chapman, T. Hammond, A. Lenef, R. Rubenstein, E. Smith, J. Schmiedmayer, D. Pritchard; Phys.Rev.Lett. **75**, 3783 (1995).
- *Atom Wave Interferometry with Diffraction Gratings of Light;*
E. Rasel, M. Oberthaler, H. Batelaan, J. Schmiedmayer, A. Zeilinger; Phys.Rev.Lett. **75**, 2633 (1995).
- *Optics and Interferometry with Molecules;*
M. Chapman, C. Ekstrom, T. Hammond, R. Rubenstein, J. Schmiedmayer, S. Wehinger, D. Pritchard; Phys.Rev.Lett. **74**, 4783 (1995).
- *The Matter Wave Index of Refraction of a Gas Measured by an Atom Interferometer;*
J. Schmiedmayer, M. Chapman, C.R. Ekstrom, T. Hammond, S. Wehinger, D. Pritchard; Phys.Rev.Lett. **74**, 1043 (1995).

Other

- *Measurement of the Electric Polarizability of the Neutron,*
J. Schmiedmayer, P. Riehs, J.A. Harvey, N.W. Hill; Phys.Rev.Lett. **66**, 1015 (1991)
- *A Constraint on Hypothetical Light Bosons from Low Energy Neutron Physics,*
H. Leeb, J. Schmiedmayer; Phys.Rev.Lett. **67**, 1472 (1992)

Reviews

- *Optics and Interferometry with Atoms and Molecules;*
J. Schmiedmayer, M. Chapman, C.R. Ekstrom, T. Hammond, A. Lenef, R. Rubenstein, E. Smith, D.E. Pritchard;
in: Atom Interferometry, Ed. P. Berman, p 1-84 (Academic Press 1997)
- *Classical and Quantum Atom Fringes;*
H. Batelaan, St. Bernet, M. Oberthaler, E. Rasel, J. Schmiedmayer, A. Zeilinger;
in: Atom Interferometry, Ed. P. Berman, p 85-120 (Academic Press 1997)
- *Microscopic Atom Optics: From Wires to an Atom Chip;*
R. Folman, P. Krüger, J. Schmiedmayer, J. Denschlag, C. Henkel;
Advances of Atomic and Molecular and Optical Physics Ed. P. Berman, H. Walter Vol. 48, 263 (2002).
- *Atom Interferometer;*
A. Cronin, D. Pritchard, J. Schmiedmayer; Rev. Mod. Phys. (in print) arXiv:0712.3703