

Summary

- **>150 publications**, thereof
35 Nature/Science, 67 Physical Review Letters/Nature Physics/Physical Review X
- **Citation Metrics:**
Google Scholar citations: **(total) > 46800, h-index: 88**
Publons (formerly ISI WoS): **(total) >29300, h-index: 72,**
average citations per article > 169

List of Publications

- 153** J. Vijayan, P. Sompet, G. Salomon, J. Koepsell, S. Hirthe, A. Bohrdt, F. Grusdt, I. Bloch, C. Gross
Time-Resolved Observation of Spin-Charge Deconfinement in Fermionic Hubbard Chains
arXiv:1905.13638 (submitted to *Science*)
- 152** J. Koepsell, J. Vijayan, P. Sompet, F. Grusdt, T. Hilker, E. Demler, G. Salomon, I. Bloch, C. Gross
Imaging magnetic polarons in the doped Fermi-Hubbard model
Nature **572**, 358-362 (2019)
- 151** D. A. Abanin, E. Altman, I. Bloch, M. Serbyn
Colloquium: Many-body localization, thermalization, and entanglement
Reviews of Modern Physics **91**, 021001 (2019)
- 150** C. Schweizer, F. Grusdt, M. Berngruber, L. Barbiero, E. Demler, Nathan Goldman, I. Bloch, M. Aidelsburger
Floquet approach to Z₂ lattice gauge theories with ultracold atoms in optical lattices
Nature Physics (accepted), arXiv:1901.07103
- 149** S. Hollerith, J. Zeiher, J. Rui, A. Rubio-Abadal, V. Walther, T. Pohl, D. M. Stamper-Kurn, I. Bloch, C. Gross
Quantum gas microscopy of Rydberg macrodimers
Science **364**, 664-667, 2019
- 148** N. Darkwah Oppong, L. Riegger, O. Bettermann, M. Höfer, J. Levinsen, M. M. Parish, I. Bloch, S. Fölling
Observation of coherent multi-orbital polarons in a two-dimensional Fermi gas
Physical Review Letters **122**, 193604 (2019)
- 147** G. Salomon, J. Koepsell, J. Vijayan, T. A. Hilker, J. Nespolo, L. Pollet, I. Bloch, C. Gross
Direct observation of incommensurate magnetism in Hubbard chains
Nature **565**, 56-60 (2019)
- 146** I. Bloch
Quantum Simulations Come of Age
Nature **14**, 1159-1161 (2018)
- 145** F. Seeßelberg, X.-Y. Luo, M. Li, R. Bause, S. Kotochigova, I. Bloch, C. Gohle
Extending rotational coherence of interacting polar molecules in a spin-decoupled magic trap
Physical Review Letters **121**, 253401 (2018)
- 144** T. Kohlert, S. Scherg, X. Li, H. P. Lüschen, S. Das Sarma, I. Bloch, M. Aidelsburger
Observation of many-body localization in a one-dimensional system with single-particle mobility edge
Physical Review Letters **122**, 170403 (2019)

- 143** S. Scherg, T. Kohlert, J. Herbrych, J. Stolpp, P. Bordia, U. Schneider, F. Heidrich-Meisner, I. Bloch, M. Aidelsburger
Non-Equilibrium Mass Transport in the 1D Fermi-Hubbard Model
Physical Review Letters **121**, 130402 (2018)
- 142** L. Riegger, N. Darkwah Oppong, M. Höfer, D. R. Fernandes, I. Bloch, S. Fölling
Localized Magnetic Moments with Tunable Spin Exchange in a Gas of Ultracold Fermions
Physical Review Letter **120**, 143601 (2018)
- 141** M. Lohse, Ch. Schweizer, H. M. Price, O. Zilberberg, I. Bloch
Exploring 4D Quantum Hall Physics with a 2D Topological Charge Pump
Nature **553**, 55 (2018)
- 140** H P. Lüschen, S. Scherg, T. Kohlert, M. Schreiber, P. Bordia, X. Li, S. D. Sarma, I. Bloch
Single-Particle Mobility Edge in a One-Dimensional Quasiperiodic Optical Lattice
Physical Review Letters **120**, 130402 (2018)
- 139** F. Seeßelberg, N. Buchheim, Z.K. Lu, T. Schneider, X.-Y. Luo, I. Bloch and C. Gohle
Modeling the adiabatic creation of ultracold, polar $^{23}\text{Na}^{40}\text{K}$ molecules
Physics Review **A 97**, 013405 (2018)
- 138** J. Zeiher, Jae-yoon Choi, A. Rubio-Abadal, T. Pohl, R. van Bijnen, I. Bloch, Christian Gross
Coherent many-body spin dynamics in a long-range interacting Ising chain
Physical Review **X 7**, 041063 (2017)
- 137** C. Gross, I. Bloch
Quantum simulations with ultracold atoms in optical lattices
Science **357**, 995 (2017)
- 136** L. Riegger, N. Darkwah Oppong, M. Höfer, D. R. Fernandes, I. Bloch, S. Fölling
Localized magnetic moments with tunable spin exchange in a gas of ultracold fermions
arXiv:1708.03810
- 135** T. Hilker, G. Salomon, F. Grusdt, A. Omran, M. Boll, E. Demler, I. Bloch, C. Gross
Revealing hidden antiferromagnetic correlations in doped Hubbard chains via string correlators
Science **357**, 484 (2017)
- 134** M. Reitter, J. Näger, K. Wintersperger, Ch. Sträter, I. Bloch, A. Eckardt, U. Schneider
Interaction dependent heating and atom loss in a periodically driven optical lattice
Physical Review Letters **119**, 200402 (2017)
- 133** P. Bordia, H. Lüschen, S. Scherg, S. Gopalakrishnan, M. Knap, U. Schneider, I. Bloch
Probing Slow Relaxation and Many-Body Localization in Two-Dimensional Quasi-Periodic Systems
Physical Review **X 7**, 041047

- 132** H. P. Lüschen, P. Bordia, S. Scherg, F. Alet, E. Altman, U. Schneider, I. Bloch
Observation of Slow Dynamics near the Many-Body Localization Transition in One-Dimensional Quasiperiodic Systems
Physical Review Letters **119**, 260401 (2017)
- 131** H. P. Lüschen, P. Bordia, S. S. Hodgman, M. Schreiber, S. Sarkar, A. J. Daley, M. H. Fischer, E. Altman, I. Bloch, U. Schneider
Signatures of Many-Body Localization in a Controlled Open Quantum System
Physical Review **X** **7**, 011034 (2017)
- 130** P. Bordia, H. Lüschen, U. Schneider, M. Knap, I. Bloch
Periodically Driving a Many-Body Localized Quantum System
Nature Physics **13**, 460–464 (2017)
- 129** C. Schweizer, M. Lohse, R. Citro, and I. Bloch
Spin Pumping and Measurement of Spin Currents in Optical Superlattices
Physical Review Letters **117**, 170405 (2016)
- 128** M. Boll, T. Hilker, G. Salomon, A. Omran, J. Nespolo, L. Pollet, I. Bloch, C. Gross
Spin- and Density-Resolved Microscopy of Antiferromagnetic Correlations in Fermi-Hubbard Chains
Science **353**, 6305 (2016)
- 127** J. Zeiher, R. van Bijnen, P. Schauß, S. Hild, J.-y. Choi, T. Pohl, I. Bloch, C. Gross
Many-body interferometry of a Rydberg-dressed spin lattice
Nature Physics **12**, 1095–109 (2016)
- 126** J.-y. Choi, S. Hild, J. Zeiher, P. Schauß, A. Rubio-Abadal, T. Yefsah, V. Khemani, D. A. Huse, I. Bloch, C. Gross
Exploring the many-body localization transition in two dimensions
Science **352**, 1547 (2016)
- 125** C. Hofrichter, L. Riegger, F. Scazza, M. Höfer, D. R. Fernandes, I. Bloch, S. Fölling
Direct probing of the Mott crossover in the $SU(N)$ Fermi-Hubbard model
Physical Review **X** **6**, 021030 (2016)
- 124** L. Vidmar, J. P. Ronzheimer, M. Schreiber, S. Braun, S. S. Hodgman, S. Langer, F. Heidrich-Meisner, I. Bloch, U. Schneider
Dynamical Quasicondensation of Hard-Core Bosons at Finite Momenta
Physical Review Letters **115**, 175301 (2015)
- 123** A. Omran, M. Boll, T. Hilker, K. Kleinlein, G. Salomon, I. Bloch, C. Gross
Microscopic Observation of Pauli Blocking in Degenerate Fermionic Lattice Gases
Physical Review Letters **115**, 263001 (2015)
- 122** M. Höfer, L. Riegger, F. Scazza, C. Hofrichter, D.R. Fernandes, M. M. Parish, J. Levinsen, I. Bloch, S. Fölling
Observation of an orbital interaction-induced Feshbach resonance in 173-Yb
Physical Review Letters **115**, 265302 (2015)
- 121** T. Li, L. Duca, M. Reitter, F. Grusdt, E. Demler, M. Endres, M. Schleier-Smith, I. Bloch, U. Schneider
Bloch state tomography using Wilson lines
Science **352**, 1094 (2016)

- 120** P. Bordia, H. P. Lüschen, S. S. Hodgman, M. Schreiber, I. Bloch, U. Schneider
Coupling Identical 1D Many-Body Localized Systems
Physical Review Letters **116**, 140401 (2016)
- 119** J. Zeiher, P. Schauß, S. Hild, T. Macrì, I. Bloch, Ch. Gross
Microscopic Characterization of Scalable Coherent Rydberg Superatoms
Physical Review **X** **5**, 031015 (2015)
- 118** M. Schreiber, S. S. Hodgman, P. Bordia, H. P. Lüschen, M. H. Fischer, R. Vosk, E. Altman, U. Schneider, I. Bloch
Observation of many-body localization of interacting fermions in a quasi-random optical lattice
Science **349**, 842 (2015)
- 117** M. Lohse, Ch. Schweizer, O. Zilberberg, M. Aidelsburger, I. Bloch
A Thouless Quantum Pump with Ultracold Bosonic Atoms in an Optical Superlattice
Nature Physics **12**, 350–354 (2016)
- 116** T. Fukuhara, S. Hild, J. Zeiher, P. Schauß, I. Bloch, M. Endres, Ch. Gross
Spatially Resolved Detection of a Spin-Entanglement Wave in a Bose-Hubbard Chain
Physical Review Letters **115**, 035302 (2015), DOI: 10.1103/PhysRevLett.115.035302
- 115** L. Vidmar, J. P. Ronzheimer, M. Schreiber, S. Braun, S. S. Hodgman, S. Langer, F. Heidrich-Meisner, I. Bloch, U. Schneider
Dynamical Quasicondensation of Hard-Core Bosons at Finite Momenta
Physical Review Letters **115**, 175301 (2015)
- 114** P. Schauß, J. Zeiher, T. Fukuhara, S. Hild, M. Cheneau, T. Macrì, T. Pohl, I. Bloch, Ch. Gross
Crystallization in Ising quantum magnets
Science **347**, 1455 (2015)
- 113** S. Braun, M. Friesdorf, S. S. Hodgman, M. Schreiber, J. P. Ronzheimer, A. Riera, M. del Rey, I. Bloch, J. Eisert, U. Schneider
Emergence of coherence and the dynamics of quantum phase transitions
PNAS **112**, 3461 (2015)
- 112** M. Aidelsburger, M. Lohse, C. Schweizer, M. Atala, J.T. Barreiro, S. Nascimbène, N.R. Cooper, I. Bloch, N. Goldman
Measuring the Chern number of Hofstadter bands with ultracold bosonic atoms
Nature Physics **11**, 162–166 (2015)
- 111** L. Duca, T. Li, M. Reitter, I. Bloch, M. Schleier-Smith, U. Schneider
An Aharonov-Bohm interferometer for determining Bloch band topology
Science **347**, 288-292 (2015)
- 110** S. Hild, T. Fukuhara, P. Schauss, J. Zeiher, M. Knap, E. Demler, I. Bloch, C. Gross
Far-from-equilibrium spin transport in Heisenberg quantum magnets
Physical Review Letters **113**, 147205 (2014)

- 109** U. Schneider, S. Mandt, A. Rapp, S. Braun, H. Weimer, I. Bloch, A. Rosch
Comment on “Consistent thermostatics forbids negative absolute temperatures”
arXiv:1407.4127
- 108** S. Braun, M. Friesdorf, S. Hodgman, M. Schreiber, J.P. Ronzheimer, A. Riera, M del Rey, I. Bloch, J. Eisert, U. Schneider
Emergence of coherence and the dynamics of quantum phase transitions
PNAS **112**, 3641 (2015)
- 107** F. Scazza, C. Hofrichter, M. Höfer, P. C. De Groot, I. Bloch, S. Fölling
Observation of two-orbital spin-exchange interactions with ultracold $SU(N)$ -symmetric fermions
Nature Physics **10**, 779 (2014)
- 106** M. Atala, M. Aidelsburger, M. Lohse, J. T. Barreiro, B. Paredes, I. Bloch,
Observation of Chiral Currents with Ultracold Atoms in Bosonic Ladders
Nature Physics **10**, 588 (2014)
- 105** M. Knap, A. Kantian, Th. Giamarchi, I. Bloch, M. Lukin, E. Demler
Probing Real-Space and Time-Resolved Correlation Functions with Many-Body Ramsey Interferometry
Physical Review Letters **111**, 147205 (2013)
- 104** M. Aidelsburger, M. Atala, M. Lohse, J.T. Barreiro, B. Paredes, I. Bloch
Realization of the Hofstadter Hamiltonian with ultracold atoms in optical lattices
Physical Review Letters **111**, 185301 (2013)
- 103** T. Fukuhara, P. Schauß, M. Endres, S. Hild, M. Cheneau, I. Bloch, C. Gross
Microscopic observation of magnon bound states and their dynamics
Nature **502**, 76 (2013)
- 102** M. Aidelsburger, M. Atala, S. Nascimbène, S. Trotzky, Y.-A. Chen, I. Bloch
Experimental realization of strong effective magnetic fields in optical superlattice potentials
Appl. Phys. **B 113**, 1 (2013)
- 101** M. Endres, M. Cheneau, T. Fukuhara, C. Weitenberg, P. Schauß, C. Gross, L. Mazza, M. Carmen Banuls, L. Pollet, I. Bloch, S. Kuhr
Single-site- and single-atom-resolved measurement of correlation functions
Appl. Phys. **B 113**, 1 (2013)
- 100** J.P. Ronzheimer, M. Schreiber, S. Braun, S. Hodgman, S. Langer, I.P. McCulloch, F. Heidrich-Meisner, I. Bloch, U. Schneider
Expansion dynamics of interacting bosons in homogeneous lattices in one and two dimensions
Physical Review Letters **110**, 205301 (2013)
- 99** M. Atala, M. Aidelsburger, J.T. Barreiro, D. Abanin, T. Kitagawa, E. Demler, I. Bloch
Direct Measurement of the Zak Phase in Topological Bloch Bands
Nature Physics **9**, 795 (2013)
- 98** D. Abanin, T. Kitagawa, I. Bloch, E. Demler
Interferometric approach to measuring band topology in 2D optical lattices
Physical Review Letters **110**, 165304 (2013)

- 97** T. Fukuhara, A. Kantian, M. Endres, M. Cheneau, P. Schauß, S. Hild, D. Bellem, U. Schollwöck, Th. Giamarchi, Ch. Gross, I. Bloch, S. Kuhr
Quantum dynamics of a single, mobile spin impurity
Nature Physics **9**, 235 (2013)
- 96** S. Braun, J. P. Ronzheimer, M. Schreiber, S. S. Hodgman, T. Rom, I. Bloch, U. Schneider
Negative Absolute Temperature for Motional Degrees of Freedom
Science **339**, 52 (2013)
- 95** P. Schauß, M. Cheneau, M. Endres, T. Fukuhara, S. Hild, A. Omran, Th. Pohl, Ch. Gross, S. Kuhr, I. Bloch
Observation of spatially ordered structures in a two-dimensional Rydberg gas
Nature **491**, 87 (2012)
- 94** M. Endres, T. Fukuhara, D. Pekker, M. Cheneau, P. Schauss, Ch. Gross, E. Demler, S. Kuhr, I. Bloch
The ‘Higgs’ amplitude mode at the two-dimensional superfluid-Mott insulator transition
Nature **487**, 454 (2012)
- 93** S. Nascimbène, Y.-A. Chen, M. Atala, M. Aidelsburger, S. Trotzky, B. Paredes, I. Bloch
Experimental realization of plaquette resonating valence-bond states with ultracold atoms in optical lattices
Physical Review Letters **108**, 205301 (2012)
- 92** I. Bloch, J. Dalibard, S. Nascimbène
Quantum simulations with ultracold atoms
Nature Physics **8**, 267 (2012)
- 91** S. Trotzky, Y.-A. Chen, A. Flesch, I. McCulloch, U. Schollwöck, J. Eisert, I. Bloch
Probing the relaxation towards equilibrium in an isolated strongly correlated 1D Bose gas
Nature Physics **8**, 325 (2012)
- 90** U. Schneider, L. Hackermüller, J.-P. Ronzheimer, S. Will, S. Braun, Th. Best, I. Bloch, E. Demler, S. Mandt, D. Rasch, A. Rosch
Fermionic transport and out-of-equilibrium dynamics in a homogeneous Hubbard model with Ultracold atoms
Nature Physics **8**, 213 (2012)
- 89** M. Cheneau, P. Barmettler, D. Poletti, M. Endres, P. Schauss, T. Fukuhara, C. Gross, I. Bloch, C. Kollath, S. Kuhr
Light-Cone-Like Spreading of Correlations in a Quantum Many-Body System
Nature **481**, 484 (2012)
- 88** M. Aidelsburger, M. Atala, S. Nascimbène, S. Trotzky, Y.-A. Chen, I. Bloch
Experimental Realization of Strong Effective Magnetic Fields in an Optical Lattice
Physical Review Letters **107**, 255301 (2012)

- 87** M. Endres, M. Cheneau, T. Fukuhara, Ch. Weitenberg, P. Schauss, L. Mazza, M.-C. Banuls, L. Pollet, I. Bloch & S. Kuhr
Direct Observation of Quantum Correlated Particle Hole Pairs and Non-Local String Order in Low Dimensional Mott Insulators
Science **334**, 200 (2011)
- 86** Y.-A. Chen, S. Nascimbene, M. Aidelsburger, M. Atala, S. Trotzky & I. Bloch
Controlling Correlated Tunneling and Superexchange Interactions with AC-Driven Optical Lattices
Physical Review Letters **107**, 210405 (2011)
- 85** C. Kasztelan, S. Trotzky, Y.-A. Chen, I. Bloch, I.P. McCulloch, U. Schollwöck, G. Orso
Landau-Zener sweeps and sudden quenches in coupled Bose-Hubbard chains
Physical Review Letters **106**, 155302 (2011)
- 84** M. Snoek, I. Titvinidze, I. Bloch & W. Hofstetter
Effect of Interactions on Harmonically Confined Bose-Fermi Mixtures in Optical Lattices
Physical Review Letters **106**, 155301 (2011)
- 83** Ch. Weitenberg, P. Schauß, T. Fukuharam, M. Cheneau, M. Endres, I. Bloch, S. Kuhr
Coherent light scattering from a two-dimensional Mott insulator
Physical Review Letters **106**, 215301 (2011)
- 82** Ch. Weitenberg, M. Endres, J.F. Sherson, M. Cheneau, P. Schauss, T. Fukuhara, I. Bloch, S. Kuhr
Single-Spin Addressing in an Atomic Mott Insulator
Nature **471**, 319 (2011)
- 81** S. Will, Th. Best, S. Braun, U. Schneider, I. Bloch
Coherent Interaction of a Single Fermion with a Small Bosonic Field
Physical Review Letters **106**, 115305 (2011)
- 80** I. Bloch
Ultracold Bosonic Atoms in Optical Lattices in Understanding Quantum Phase Transitions, ed. by L. Carr, CRC Press (2010)
- 79** S. Trotzky, Y.-A. Chen, U. Schnorrberger, P. Cheinet & Immanuel Bloch
Controlling and Detecting Spin Correlations of Ultracold Atoms in Optical lattices
Physical Review Letters **105**, 265303 (2010)
- 78** I. Bloch
Paired in one dimension □
Nature **467**, 535-536 (2010)
- 77** Y. Chen, S. Huber, S. Trotzky, I. Bloch & E. Altman
Many-body Landau-Zener dynamics in coupled 1D Bose liquids □
Nature Physics **7**, 61-67 (2011)
- 76** J. Sherson, C. Weitenberg, M. Endres, M. Cheneau, I. Bloch, S. Kuhr
Single-atom resolved fluorescence Imaging of an Atomic Mott Insulator □
Nature **467**, 68-72 (2010)

- 75 S. Will, T. Best, U. Schneider, L. Hackermüller, D. Lühmann, I. Bloch
Time-resolved observation of coherent multi-body interactions in quantum phase revivals
Nature **465**, 197-201 (2010)
- 74 Immanuel Bloch, Achim Rosch
Exploring strongly correlated quantum many-body systems with ultracold atoms in optical lattices
Physica Status Solidi B **247**, No 3, 530-536 (2010)
- 73 L. Hackermüller, U. Schneider, M. Moreno, S. Will, T. Best, T. Kitagawa, E. Demler, I. Bloch, B. Paredes
Anomalous Expansion of Attractively Interacting Fermionic Atoms in Optical Lattices
Science **327**, 1621 (2010)
- 72 I. Bloch,
Strongly Correlated Quantum Phases of Ultracold Atoms in Optical Lattices
Proc. Int. School of Physics “Enrico Fermi” Course CLXXIII. eds. R. Kaiser, D. S. Wiersma and L. Fallani (2009)
- 71 U. Schnorrberger, J. D. Thompson, S. Trotzky, R. Pugatch, N. Davidson, S. Kuhr, I. Bloch
Electromagnetic induced transparency and light storage in a Mott insulator □
Physical Review Letters **103**, 033003 (2009)
- 70 S. Trotzky, L. Pollet, F. Gerbier, U. Schnorrberger, I. Bloch, N. V. Prokov’ev, B. Svistunov, M. Troyer
Suppression of the critical temperature for superfluidity near the Mott transition: validating a quantum simulator
Nature Physics **6**, 998 (2010)
- 69 Th. Best, S. Will, U. Schneider, L. Hackermüller, D. van Oosten, I. Bloch
Role of interactions in ^{87}Rb - ^{40}K Bose-Fermi mixtures in a 3d optical lattice □
Physical Review Letters **102**, 030408 (2009)
- 68 U. Schneider, L. Hackermueller, S. Will, Th. Best, I. Bloch, T.A. Costi, R.W. Helmes, D. Rasch, A. Rosch
Metallic and Insulating Phases of Repulsively Interacting Fermions in a 3D Optical Lattice
Science **322**, 1520-1525 (2008)
- 67 I. Bloch
Quantum coherence and entanglement with ultracold atoms in optical lattices □
Nature **453**, 1016-1022 (2008)
- 66 P. Cheinet, S. Trotzky, M. Feld, S. Fölling, U. Schnorrberger, M. Moreno, B. Paredes, I. Bloch
Counting Atoms using Interaction Blockade with Ultracold Atoms in Optical Superlattices
Physical Review Letters **101**, 090404 (2008)
- 65 P. Barmettler, A.-M. Rey, I. Bloch, E. Demler, M.D. Lukin, V. Gritsev
Controllable dynamical generation of entanglement and frustrated spin states in ultracold bosonic double well superlattices
Physical Review A **78**, 012330 (2008)

- 64** I. Bloch, J. Dalibard and W. Zwerger
Many-Body Physics with Ultracold Gases
Rev. Mod. Phys. **80**, 885 (2008)
- 63** I. Bloch
Quantum Gases
Science **319**, 1202 (2008)
- 62** A. Koetsier, R. A. Duine, I. Bloch and H. Stoof
Achieving the Néel state in an optical lattice
Physical Review A **77**, 023623 (2008)
- 61** B. Paredes, I. Bloch
Minimum Instances of Topological Matter in an Optical Plaquette
Physical Review A **77**, 023603 (2008)
- 60** S. Trotzky, P. Cheinet, S. Fölling, M. Feld, U. Schnorrberger, A.M. Rey, A. Polkovnikov, E. Demler, M. Lukin, I. Bloch
Direct observation and control of superexchange interactions with ultracold atoms in optical lattices
Science **319**, 295 (2008)
- 59** A. Widera, S. Trotzky, P. Cheinet, S. Fölling, F. Gerbier, V. Gritsev, E. Demler, I. Bloch
Quantum spin dynamics of squeezed Luttinger liquids in two-component atomic gases
Physical Review Letters **100**, 140401 (2008)
- 58** S. Fölling, S. Trotzky, P. Cheinet, M. Feld, R. Saers, T. Müller, A. Widera, I. Bloch
Direct observation of second order atom tunnelling
Nature **448**, 1029-1032 (2007)
- 57** I. Bloch
Strongly Correlated Quantum Phases of Ultracold Atoms in Optical Lattices
Proceedings of the International School of Physics "Enrico Fermi",
Course CLXIV, Varenna, 20 - 30 June 2006, edited by M. Inguscio, W. Ketterle, C. Salomon
(IOS Press, Amsterdam) 2008
- 56** T. Müller, S. Fölling, A. Widera, I. Bloch
State preparation and dynamics of ultracold atoms in higher lattice orbitals
Physical Review Letters **99**, 200405 (2007)
- 55** A. M. Rey, V. Gritsev, I. Bloch, E. Demler, M. Lukin
Preparation and detection of magnetic quantum phases in optical superlattices
Physical Review Letters **99**, 140601 (2007)
- 54** F. Gerbier, S. Fölling, A. Widera, I. Bloch
Visibility of a Bose-condensed gas released from an optical lattice at finite temperature
arXiv:0701.420
- 53** Ch. Gross, Th. Best, D. van Oosten, I. Bloch
Coherent and incoherent spectral broadening in a photonic crystal fiber
Opt. Lett. **32**, 1767-1769 (2007)

- 52** T. Gericke, F. Gerbier, A. Widera, S. Fölling, O. Mandel; I. Bloch
Adiabatic loading of a Bose-Einstein condensate in a 3D optical lattice
J. Mod. Phys. **54**, 735 (2007)
- 51** T. Rom, Th. Best, D. van Oosten, U. Schneider, S. Fölling, B. Paredes, I. Bloch
Free fermion antibunching in a degenerate Fermi gas released from an optical lattice
Nature **444**, 733-736 (2006)
- 50** I. Bloch, S. Fölling, A. Widera, T. Müller, T. Rom, Th. Best, D. van Oosten, U. Schneider, B. Paredes, F. Gerbier
Strongly correlated quantum matter in optical lattices
XX International Conference on Atomic Physics - ICAP 2006. AIP Conference Proceedings, Volume **869**, pp. 191-200 (2006)
- 49** P. Treutlein, T. Steinmetz, Y. Colombe, B. Lev, P. Hommelhoff, J. Reichel, M. Greiner, O. Mandel, A. Widera, T. Rom, I. Bloch, T. W. Hänsch
Quantum information processing in optical lattices and magnetic microtraps
Fortschr. Phys. **54**, 702-718 (2006)
- 48** S. Fölling, A. Widera, T. Müller, F. Gerbier, I. Bloch
Formation of spatial shell structures in the superfluid to Mott insulator transition
Physical Review Letters **97**, 060403 (2006)
- 47** A. Widera, F. Gerbier, S. Fölling, T. Gericke, O. Mandel, I. Bloch
Precision measurement of spin-dependent interaction strengths for spin-1 and spin-2 ^{87}Rb atoms
New J. Phys. **8**, 152 (2006)
- 46** I. Bloch
Engineering multi-particle entanglement with neutral atoms in optical lattices
Proc. Int. School of Physics "Enrico Fermi", eds. G. Casati, D.L Shepelyansky and P. Zoller, IOS Press, p. 521-548 (2006)
- 45** F. Gerbier, A. Widera, S. Fölling, O. Mandel, I. Bloch
Resonant control of spin dynamics in ultracold quantum gases by microwave dressing
Physical Review A **73**, 041602R (2006)
- 44** F. Gerbier, S. Fölling, A. Widera, O. Mandel, I. Bloch
Probing the number statistics of ultracold atoms across the superfluid-Mott insulator transition
Physical Review Letters **96**, 090401 (2006)
- 43** I. Bloch, M. Greiner,
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