Univ. Prof. Dr. Markus Arndt

Personal Information

Birth	14.09.1965, Unkel/Rh. (Germany)
Nationality	Germany
Marital status	Married, 2 children
WWW	www.quantumnano.at
EMAIL	markus.arndt@univie.ac.at

Career development

since 2008	Full Professor of Quantum Nanophysics at University of Vienna,
2004 - 2008	Professor of Quantum Nanophysics at University of Vienna,
2002	Docent / Ao. Univ. Prof. at University of Vienna (Habilitation)
1999 - 2002	Universitätsassistent at University of Vienna, with Anton Zeilinger.
1997 - 1998	Postdoc at University of Innsbruck, with Anton Zeilinger.
1995 - 1997	Postdoc at Ecole Normale Supérieure, Paris with Jean Dalibard
1994 - 1995	Postdoc at MPQ, Garching, with A. R. Weis and T. W. Hänsch
1991 - 1994	PhD (LMU, Munich) at MPQ, Garching: with A. R. Weis and T. W. Hänsch
1990 - 1991	Diploma Work at LMU Munich, with Herbert Walther

Professional activities

7/2020 – 9/2022	Scientific Director, Vienna Doctoral School in Physics
10/2018 – 9/2022	Vice Dean, Faculty of Physics, University of Vienna
1/2020-12/2022	Coordinator, EU FET Open *SuperMaMa*
Since 9/2016	Speaker, Erwin Schrödinger Center for Quantum Science & Technology ESQ Austria
3/2016 – 6/2020	Speaker, Vienna Doctoral School in Physics
3/2013-2/2016	Coordinator, EU FET Open *NANOQUESTFIT*
2013 - 2015	PI & Founding member, Research Platform *QuNaBioS*
10/2012-9/2014	Dean, Faculty of Physics, University of Vienna
1/2007-9/2012	Speaker, Quantum optics, Q-nanophysics and Q-information
2006 - 2013	Speaker, Vienna FWF Graduate Program Complex Quantum Systems
2007 - 2011	Coordinator, ESF network: Molecule Interferometry & Metrology *MIME*
2008 - 2013	Member, Steering Committee to the ESF Network *Casimir*

Awards, Distinctions & Research Prizes

2020	Schrödinger Prize of the Austrian Academy of Sciences, ÖAW, with L. Erdös
2019	Robert-Wichard-Pohl Prize, German Physical Society, DPG
2018	Fetzer Pioneer Award, Fetzer Foundation
2014	Outstanding Referee for the journals of the American Physical Society (APS)
2013	Prize for Natural and Technical Sciences, City of Vienna
2012	ERC Advanced Grant, European Research Council
2008	Wittgenstein Prize, Ministry for Science and Research, BMWF & FWF
2006	Science Communication Award (3rd), Austrian Science Fund, FWF
2001	START Prize, Ministry of Education, Science & Culture & FWF
2000	Fritz-Kohlrausch Prize, Austrian Physical Society, ÖPG
2000	Erich-Schmid-Prize, Austrian Acad. of Sciences, ÖAW, with G. Springholz

5 Distinguished fellowships and memberships

Since 2014	Corresponding Member, Austrian Academy of Sciences (ÖAW)
2008-2013	Member Junge Kurie, Austrian Academy of Sciences (ÖAW)
1996-1997	DFG research fellowship
1995-1996	Feodor-Lynen fellowship, Alexander von Humboldt foundation
1986-1991	Fellowship, Studienstiftung des deutschen Volkes

Research Interests

- **Universal matter-wave interferometry**
  with atoms, clusters, tailored molecules, biomolecules and nanoparticles.
- **Quantum physics at the interface to the classical world:**
  decoherence and interferometric tests of wave function collapse.
- **Quantum physics at the interface to chemistry:**
  Quantum nanorulers to measure electric, magnetic, optical and structural properties of molecules.
- **Quantum physics at the interface to biology:**
  Matter-wave experiments with vitamins, antibiotics and polypeptides.
- **Quantum physics at the interface to mass spectrometry technologies**
  Quantum nanowire detectors for biomolecular beams
- **Quantum physics at the interface to optomechanics:**
  Optical cooling of dielectric nanospheres in high-finesse microcavities as well as rotational cooling

A) Publications listed in the Science Citation Index

1) Y.Y. Fein, S. Pedalino, A. Shayeghi, F. Kiałka, S. Gerlich, and M. Arndt
Nanoscale magnetism probed in a matter-wave interferometer
Phys. Rev. Lett. 129, 123001 (2022), DOI: 10.1103/PhysRevLett.129.123001
Editor's choice & Editor's pick & Featured in "Physics": https://physics.aps.org/articles/v15/137

1. S. Pedalino, T. de Sousa, Y.Y. Fein, S. Gerlich, and M. Arndt
Exploring metal nanoparticles for matter-wave interferometry
Phys. Rev. A 106, 023312 (2022), DOI: 10.1103/PhysRevA.106.023312

2. *A roadmap for universal high-mass matter-wave interferometry*
F. Kialka, Y. Y. Fein, S. Pedalino, S. Gerlich, and M. Arndt
AVS Quantum Sci. 4, 020502 (2022), DOI: 10.1116/5.0080940
Scilight: DOI: 10.1063.10.0010425

3. High finesse microcavities in the optical telecom O-band
J. Fait, S. Putz, G. Wachter, J. Schalko, U. Schmid, M. Arndt, and M. Trupke
Appl. Phys. Lett. 119, 221112 (2021), DOI: 10.1063/5.0066620

4. *Single-, double-, and triple-slit diffraction of molecular matter-waves*
C. Brand, S. Troyer, C. Knobloch, O. Cheshnovsky, and M. Arndt
Am. J. Phys. 89, 1132 (2021), DOI: 10.1119/5.0058805
Am. J. Phys. Cover Page & Editor´s Pick

5. W. C.-W. Huang, H. Batelaan, M. Arndt
Kapitza-Dirac Blockade: A Universal Tool for the Deterministic Preparation of Non-Gaussian Oscillator States
Phys. Rev. Lett. 126 (2021), DOI: 10.1103/PhysRevLett.126.253601
Phys. Rev. Lett. Cover Page

6. C. Brand, M. R. A. Monazam, C. Mangler, Y. Lilach, O. Cheshnovsky, M. Arndt, J. Kotakoski
The morphology of doubly-clamped graphene nanoribbons
2D Materials 8, 025035 (2021), DOI: 10.1088/2053-1583/abe952

7. C. Brand, F. Kialka, S. Troyer, C. Knobloch, K. Simonovic, B.A. Stickler, K. Hornberger, M. Arndt,
Bragg diffraction of large organic molecules
Phys. Rev. Lett. (2020), DOI: 10.1103/PhysRevLett.125.033604
Editor's Suggestion

8. Y.Y. Fein, A. Shayeghi, F. Kialka, P. Geyer, S. Gerlich, M. Arndt,
Quantum-assisted diamagnetic deflection of molecules
Phys. Chem. Chem. Phys. (2020), DOI: 10.1039/d0cp02211j
PCCP Hot Paper

9. J. Schätti, V. Köhler, M. Mayor, Y.Y. Fein, P. Geyer, L. Mairhofer, S. Gerlich, M. Arndt,
Matter-wave interference and deflection of tripeptides decorated wth fluorinated alkyl chains
J Mass Spectrom. (2020), DOI:10.1002/jms.4514

10. A. Shayeghi, P. Rieser, G. Richter, U. Sezer, J.H. Rodewald, P. Geyer, T.J. Martinez, M. Arndt,
Matter-wave interference of a native polypeptide
Nature Comm., 11, 144 (2020), DOI: 10.1038/s41467-020-15280-2

11. C. Brand, K. Simonovic, F. Kialka, S. Troyer, P., Geyer, M. Arndt,
A fiber-based beam profiler for high-power laser beams in confined spaces and ultra-high vacuum
Optics Express (2020), DOI: 10.1364/OE.387650

12. Y. Y. Fein, F. Kialka, P. Geyer, S. Gerlich, M. Arndt,
Coriolis compensation via gravity in a matter-wave interferometer
New Journal of Physics (2020), DOI:10.1088/1367-2630/ab73c5

13. Y. Y. Fein, A. Shayeghi, L. Mairhofer, F. Kialka, P. Rieser, P. Geyer, S. Gerlich, M. Arndt,
Quantum-Assisted Measurement of Atomic Diamagnetism
Phys. Review X 10, 011014(2020), DOI: 10.1103/PhysRevX.10.011014

14. Y. Y. Fein, P. Geyer, F. Kiałka, S. Gerlich, M. Arndt,
Improved accuracy fullerene polarizability measurements in a long-baseline matter-wave interferometer
Phys. Rev. Res. 1, 033158 (2019), DOI: 10.1103/PhysRevResearch.1.033158

15. Y. Y. Fein, P. Greyer, P. Zwick, F. Kiałka, S. Pedalino, M. Mayor, S. Gerlich and M. Arndt,
Quantum Superposition of Molecules Beyond 25kDa,
Nature Physics (2019), DOI:10.1038/s41567-019-0663-9
Highlighted by more than 40 News Outlets, such as Spiegel, NZZ, FAZ, Spektrum, APA, etc..

16. J. Schätti, M. Kriegleder, M. Debiossac, M. Kerschbaum, P. Geyer, M. Mayor, M. Arndt, V. Köhler,
Neutralization of insulin by photocleavage under high vacuum,
Chem. Commun. (2019), DOI: 10.1039/c9cc05712a

17. G. Wachter, S. Kuhn, S. Minniberger, C. Salter, P. Asenbaum, J. Millen, M. Schneider, J. Schalko, U. Schmid, A. Felgner, D. Hüser, M. Arndt, M. Trupke,
Silicon microcavity arrays with open access and a finesse of half a million,
Light: Science & Applications 8:37, 1-7 (2019), DOI: 10.1038/s41377-019-0145-y

18. C. Brand, M. Debiossac, T. Susi, F. Aguillon, J. Kotakoski, P. Roncin, M. Arndt
Coherent diffraction of hydrogen through the 246 pm lattice of graphene
New J. Phys. (2019), DOI: 10.1088/1367-2630/ab05ed

19. F. Kiałka, B. Stickler, K. Hornberger, Y.Y. Fein, P. Geyer, L. Mairhofer, S. Gerlich, M. Arndt,
Concepts for long-baseline high-mass matter-wave interferometry
Phys. Scr. 94 (2019), DOI: 10.1088/1402-4896/aaf243

20. J. Schätti, P. Rieser, U. Sezer, G. Richter, P. Geyer, G. G. Rondina, D. Häussinger, M. Mayor, A. Shayeghi, V. Köhler, M. Arndt
Pushing the mass limit for intact launch and photoionization of large neutral biopolymers
Commun. Chem. 1, 93 (2018), DOI: 10.1038/s42004-018-0095-y

21. B. A. Stickler, B. Papendell, S. Kuhn, B. Schrinski, J. Millen, M. Arndt, K. Hornberger
Probing macroscopic quantum superpositions with nanorotors
New J. Phys. 20, 122001 (2018), DOI: 10.1088/1367-2630/aaece4

22. C. Brand, B.A. Stickler, C. Knobloch, A. Shayeghi, K. Hornberger and M. Arndt
Conformer-selection by matter-wave interference
Phys. Rev. Lett. 121, 173002 (2018), DOI: 10.1103/PhysRevLett.121.173002

23. L. Mairhofer, S. Eibenberger, A. Shayeghi and M. Arndt
A quantum ruler for magnetic deflectometry
Entropy 20, 516 (2018), DOI: 10.3390/e20070516

24. M. Debiossac, J. Schätti, M. Kriegleder, P. Geyer, A. Shayeghi, M. Mayor, M. Arndt. andV. Köhler
Tailored photocleavable peptides: Fragmentation and neutralization pathways in high vacuum
Phys. Chem. Chem. Phys. 20, 11412--11417 (2018), DOI: 10.1039/c8cp01058g

25. J. Rodewald, N. Dörre, A. Grimaldi, P. Geyer, L. Felix, M. Mayor, A. Shayeghi and M. Arndt
Isotope-selective high-order interferometry with large organic molecules in free fall
New J. Phys. 20, 033016 (2018), DOI: 10.1088/1367-2630/aaade2

26. S. Kuhn, G. Wachter, F. Wieser, J. Millen, M. Schneider, J. Schalko, U. Schmid, M. Trupke and M. Arndt
Nanoparticle detection in an open-access silicon microcavity
Appl. Phys. Lett. 111, 253107 (2017), DOI: 10.1063/1.5008492
Editor's Pick

27. S. Kuhn, B. A. Stickler, A. Kosloff, F. Patolsky, K. Hornberger, M. Arndt and J. Millen
Optically driven ultra-stable nanomechanical rotor
Nature Comm. 8 (1) (2017), DOI: 10.1038/s41467-017-01902-9
Highlighted by Phys.Org

28. J. P. Cotter, C. Brand, C. Knobloch, Y. Lilach, O. Cheshnovsky and M. Arndt
In search of multipath interference using large molecules
Science Adv. 3, e1602478 (2017), DOI: 10.1126/sciadv.1602478
Highlighted in PhysicsWold, PhysOrg

29. L. Mairhofer, S. Eibenberger, J. P. Cotter, M. Romirer, A. Shayeghi and M. Arndt
Quantum-assisted metrology of neutral vitamins in the gas-phase
Angew. Chem. Int. Ed. 56, 6 (2017), DOI: 10.1002/ange.201704916
German Version: **Angew. Chem. 129,7 (2017)**, DOI: 10.1002/ange.201704916
Highlighted in Chemistry Views, HealthMediciNet, ProPhysik

30. L. Gallego, U. Sezer, M. Arndt and M. Mayor
Long-pulse laser launch and ionization of tailored large neutral silver nanoparticles with atomic mass assignment
Nanoscale 9, 9175-9180 (2017); DOI: 10.1039/c7nr03297n

31. J. Schätti, U. Sezer, S. Pedalino, J. P. Cotter, M. Arndt*, M. Mayor and V. Köhler*
Tailoring the volatility and stability of oligopeptides

J. Mass Spectrom. **52, 550-556(2017)**, DOI: 10.1002/jms.3959

32. J. Rodewald, P. Haslinger, N. Dörre, B.A. Stickler, A. Shayeghi, K. Hornberger and M. Arndt
New avenues for matter-wave-enhanced spectroscopy,
Appl. Phys. B 123,3 (2017), DOI 10.1007/s00340-016-6573-y

33. U. Sezer, P. Geyer, M. Kriegleder, M. Debiossac, A. Shayeghi, M. Arndt, F. Lukas and M. Mayor
Selective photodissociation of tailored molecular tags as a tool for quantum optics,
Beilstein J. Nanotechnol. 8, 325-333 (2017), DOI 10.3762/bjnano.8.35

34. S. Kuhn, A. Kosloff, B. A. Stickler, F. Patolsky, K. Hornberger, M. Arndt, and J. Millen
Full Rotational Control of Levitated Silicon Nanorods
Optica 4, 356-360 (2017), DOI: doi.org/10.1364/OPTICA.4.000356

35. C. Knobloch, B. A. Stickler, C. Brand, M. Sclafani, Y. Lilach, T. Juffmann, O. Cheshnovsky, K. Hornberger and M. Arndt
On the role of the electric dipole moment in the diffraction of biomolecules at nanomechanical gratings
Prog. Phys., 1–8 (2016), DOI: 10.1002/prop.201600025

36. B. A. Stickler, S. Nimmrichter, L. Martinetz, S. Kuhn, M. Arndt and K. Hornberger
Ro-Translational Cavity Cooling of Dielectric Rods and Disks
Phys. Rev. A 94, 033818, (2016), DOI: 10.1103/PhysRevA.94.033818

37. P. Geyer, U. Sezer, J. Rodewald, L. Mairhofer, N. Dörre, P. Haslinger, S. Eibenberger, C. Brand and M. Arndt
Perspectives for Quantum Interference with Biomolecules and Biomolecular Clusters
Phys. Scr. 91, 063007-063019 (2016), DOI: 10.1088/0031-8949/91/6/063007

38. W.P. Schleich, et al.
Quantum technology: from research to application
Appl. Phys. B 122, 1-31 (2016), DOI: 10.1007/s00340-016-6353-8

39. C. Brand, M. Sclafani, C. Knobloch, Y. Lilach, T. Juffmann, J. Kotakoski, C. Mangler, A. Winter, A. Turchanin, J. Meyer, O. Cheshnovsky and M. Arndt
An atomically thin matter-wave beam splitter
Nature Nanotechnology10, 845 - 848 (2015), DOI: 10.1038/nnano.2015.179
Nature Nano: News & Views by P. Treutlein
Highlighted by Physics World

40. Markus Arndt and Christian Brand,
Interference of atomic clocks,
Science 349, 1168-1169 (2015), DOI: 10.1126/science.aad0683

41. C. Brand, J. Fiedler, T. Juffmann, M. Sclafani, C. Knobloch, S. Scheel, Y. Lilach, O. Cheshnovsky and M. Arndt,
A Green's function approach to modeling molecular diffraction in the limit of ultra-thin gratings
Ann. Phys. 527, 580–591 (2015), DOI: 10.1002/andp.201500214

42. M. Tomandl, T. Mieling, C. Losert-Valiente Kroon, M. Hopf and M. Arndt
Simulated Interactive Research Experiments as Educational Tools for Advanced Science
Scientific Reports 5, 14108 (2015), DOI: 10.1038/srep14108
Highlighted by Phys.org, PhysicsNews, Le Scienze and others

43. S. Kuhn, P. Asenbaum, A. Kosloff, M. Sclafani, B. A. Stickler, S. Nimmrichter, K. Hornberger, O. Cheshnovsky, F. Patolsky and M. Arndt
Cavity-assisted manipulation of freely rotating silicon nanorods in high vacuum
Nano Letters 15, 5604–5608 (2015), DOI: 10.1021/acs.nanolett.5b02302

44. J. Kotakoski, C. Brand, Y. Lilach, O. Cheshnovsky, C. Mangler, M. Arndt and J. C. Meyer
Towards two-dimensional all-carbon heterostructures via ion beam patterning of single-layer graphene
Nano Letters (2015), DOI: 10.1021/acs.nanolett.5b02063

45. J. P. Cotter, S. Eibenberger, L. Mairhofer, X. Cheng, P. Asenbaum, M. Arndt;
K. Walter, S. Nimmrichter and K. Hornberger
Coherence in the presence of absorption and heating in a molecule interferometer
Nature Communications 6, 7336 (2015), DOI: 10.1038/ncomms8336

46. U. Sezer, L. Wörner, J. Horak, L. Felix, J. Tüxen, C. Götz, A. Vaziri, M. Mayor and M. Arndt
Laser-induced acoustic desorption of natural and functionalized biochromophores
Anal. Chem. 87, 5614–5619 (2015), DOI: 10.1021/acs.analchem.5b00601

47. U. Sezer, P. Schmid, L. Felix, M. Mayor and M. Arndt
Stability of high-mass molecular libraries: the role of the oligoporphyrin core
J. Mass Spectrom. 50, 235-239 (2015), DOI: 10.1002/jms.3526

48. J. Espigulé-Pons, C. Götz, A. Vaziri and M. Arndt
Physical Constraints for the Stoneham Model for Light-Dependent Magnetoreception
arXiv*:1412.7369* (2014)

49. N. Dörre, P. Haslinger, J. Rodewald, P. Geyer and M. Arndt,
A refined model for Talbot-Lau matter-wave optics with pulsed photo-depletion gratings
JOSA B 32, 114–120 (2015), DOI: 10.1364/JOSAB.32.000114

50. N. Dörre, J. Rodewald, P. Geyer, B. von Issendorff, P. Haslinger and M. Arndt
Photofragmentation beam splitters for matter-wave interferometry
Phys. Rev. Lett. 113, 233001 (2014), DOI: 10.1103/PhysRevLett.113.233001
Editor's Choice & Viewpoint in *Physics 7, 122 (2014)* by Gil Summy

51. C. Emary, J. P. Cotter and M. Arndt
Testing macroscopic realism through high-mass interferometry.
Phys. Rev. A 90,042114-1 (2014), DOI: 10.1103/PhysRevA.90.042114

52. L. Felix, U. Sezer, M. Arndt and M. Mayor,
Synthesis of Highly Fluoroalkyl-Functionalized Oligoporphyrin Systems,
Eur. J. Org. Chem.6884–6895 (2014),DOI: 10.1002/ejoc.201402816

Wiley Hot Topics in Fluorine Chemistry

53. S. Eibenberger, X. Cheng, J. P. Cotter and M. Arndt
Absolute absorption cross sections from photon recoil in a matter-wave interferometer
***Phys. Rev. Lett.* 112, 250402 (2014)**, DOI: 10.1103/PhysRevLett.112.250402

54. M. Arndt
De Broglie's meter stick: Making measurements with matter waves.
Phys. Today 67, 30-36, (2014), DOI: 10.1063/PT.3.2381

55. M. Arndt and K. Hornberger
Insight review: Testing the limits of quantum mechanical superpositions
Nature Physics10, 271-277 (2014), DOI: 10.1038/nphys2863

56. M. Tomandl, C. M. Losert-Valiente Kroon, M. Hopf and M. Arndt
Interaktive Forschungssimulationen
Praxis der Naturwissenschaften 8,31 - 36 (2013)

57. P. Asenbaum, S. Kuhn, S. Nimmrichter, U. Sezer and M. Arndt
Cavity cooling of free silicon nanoparticles in high vacuum
Nature Communications 4, 2743 (2013), DOI: 10.1038/ncomms3743

58. T. Juffmann, H. Ulbricht and M. Arndt
Experimental methods of molecular matter-wave optics
***Rep. Progr. Phys.*76**, **086402 (2013)**, DOI: 10.1088/0034-4885/76/8/086402

59. S. Eibenberger, S. Gerlich, M. Arndt, M. Mayor and J. Tüxen,
Matter-wave interference with particles selected from a molecular library with masses exceeding 10 000 amu
Phys. Chem. Chem. Phys. 15, 14696 (2013), DOI**:** 10.1039/C3CP51500A

60. M. Sclafani, T. J. Juffmann, C., Knobloch, and M. Arndt
Quantum coherent propagation of complex molecules through the frustule of the alga Amphipleura pellucida,
New Journal of Physics 15, 083004 (2013), DOI: 10.1088/1367-2630/15/8/083004
See the Video Abstract featured in Physics World 9/2013

61. P. Schmid, F. Stöhr, M. Arndt, J. Tüxen and M. Mayor
Single-Photon Ionization of Organic Molecules
J. Am. Soc. Mass Spectrom. 24, 602-8 (2013), DOI: 10.1007/s13361-012-0551-3

62. M. Arndt
Viewpoint: Free-Falling Interferometry
Physics 6, 23 (2013), DOI: 10.1103/Physics.6.23

63. P. Haslinger, N. Dörre, P. Geyer, J. Rodewald, S. Nimmrichterand M. Arndt
A universal matter-wave interferometer with optical ionization gratings in the time domain
Nature Physics 9, 144–148 (2013), DOI: 10.1038/nphys2542
News & Views, Nature Physics by A. Cronin & W. Holmgren

64. M. Arndt, A. Ekers, W. von Klitzing and H. Ulbricht
Focus on modern frontiers of matter wave optics and interferometry, Editorial
New J. Phys. 14, 125006 (2012), DOI: 10.1088/1367-2630/14/12/125006

65. T. Juffmann, A. Milic, M. Müllneritsch, P. Asenbaum, A. Tsukernik, J. Tüxen, M. Mayor, O. Cheshnovsky and M. Arndt
Real-time single-molecule imaging of quantum interference
Nature Nanotechnology7,**297 - 300 (2012)**, DOI:10.1038/nnano.2012.34
News & Views of Nature Nanotechnology, byB. Z**.** Zhao & W. Schöllkopf
Cover page of Nature Nanotechnology May 2012
Chosen 2016 by Nature Nanotechnology to be among the best science pictures in 10 years of the Nature Nanotechnology

66. M. Sclafani, M. Marksteiner, F. McLennan Keir, A. Korneev, A. Semenov, G. Gol'tsman and M. Arndt
Characterization of a superconducting nanowire detector for low energy ions
Nanotechnology 23, 065501 (2012), DOI: 10.1088/0957-4484/23/6/06550 1
Featured as *IOP Labtalk*

67. K. Hornberger, S. Gerlich, S. Nimmrichter, P. Haslinger and M. Arndt
Colloquium: Quantum interference with clusters and molecules
Rev. Mod. Phys. 84, 157-173 (2012), DOI: 10.1103/RevModPhys.84.157
Highlighted in *Nature Physics*by M. Buchanan, Feb. 2012

68. T. Juffmann, S. Nimmrichter, M. Arndt, H. Gleiter and K. Hornberger
New prospects for de Broglie interferometry: Grating diffraction in the far-field and Poisson´s spot in the near-field
Found.Phys. 42, 98-110 (2012), DOI: 10.1007/s10701-010-920-5

69. P. Asenbaum and M. Arndt
Cavity stabilization using the weak intrinsic birefringence of dielectric mirrors
Optics Letters 36, 3720-3722 (2011), DOI: 10.1364/OL.36.003720

70. J. Tüxen, S. Eibenberger, S. Gerlich, M. Arndt, M. Mayor
Highly Fluorous Porphyrins as Model Compounds for Molecule Interferometry
Eur. J. Org. Chem. 25, 4823–4833 (2011), DOI: 10.1002/ejoc.201100638
Featured by *Chemistry Views*

71. S. Nimmrichter, P. Haslinger, K. Hornberger and M. Arndt
Concept of an ionizing time-domain matter-wave interferometer
New J. Phys. 13, 075002 (2011), DOI: 10.1088/1367-2630/13/7/075002

72. M. Arndt
Coherence from spontaneity
Nature Physics 7, 375–376 (2011), DOI: 10.1038/nphys1987

73. S. Nimmrichter, K. Hornberger, P. Haslinger and M. Arndt
Testing spontaneous localization theories with matter-wave interferometry
Phys. Rev. A83, **043621 (2011)**, DOI: 10.1103/PhysRevA.83.043621
Featured by*British Daily Telegraph* Dec. 2012

74. S. Eibenberger, S. Gerlich, M. Arndt, J. Tüxen and M. Mayor
Electric moments in molecule interferometry
New J. Phys. 13 043033 (2011); DOI: 10.1088/1367-2630/13/4/043033
Featured as *IOP Select* May 2011

75. S. Gerlich, S. Eibenberger, M. Tomandl, S. Nimmrichter, K. Hornberger, P. J. Fagan, J. Tüxen, M. Mayor and M. Arndt,
Quantum interference of large organic molecules
Nature Communications2, 263 (2011), April 5th 2011, DOI: 10.1038/ncomms1263
Featured by Nature Communications April 5th 2011 , Highlight by Nature April 5th 2011
TOP100 Science Stories in Discover Magazine 2/2012

76. T. Juffmann, S. Nimmrichter, M. Arndt, H. Gleiter and K. Hornberger
New prospects for de Broglie interferometry: Grating diffraction in the far-field and Poisson's spot in the near-field
Found. Phys. 42, 98–110 (2012), DOI: 10.1007/s10701-010-9520-5

77. S. Nimmrichter, K. Hammerer, P. Asenbaum, H. Ritsch and M. Arndt
Master equation for the motion of a polarizable particle in a multimode cavity
New J. Phys. 12, 083003 (2010); DOI:10.1088/1367-2630/12/8/083003

78. A. Dreas, M. Müllneritsch, T. Juffmann, C. Cioffi, M. Arndt and M. Mayor
Immobilization of Zinc Porphyrin Complexes on Pyridine-Functionalized Glass Surfaces
Langmuir26(13), 10822–10826 (2010), DOI:10.1021/la100638u

79. J. Tüxen, S. Gerlich, S. Eibenberger, M. Arndt and M. Mayor
Quantum interference distinguishes between constitutional isomers
Chem. Commun. 46, Issue 23, pp. 4145-4147 (2010), DOI: 10.1039/c0cc00125b

80. M. Gring, S. Gerlich, S. Eibenberger, S. Nimmrichter, T. Berrada, M. Arndt, H. Ulbricht, K. Hornberger, M. Müri, M. Mayor, M. Boeckmann and N. Doltsinis
Influence of conformational molecular dynamics on matter wave interferometry
Phys. Rev. A 81, 031604(R) (2010), DOI: 10.1103/PhysRevA.81.031604
APS: Selected for the Virtual Journal of Atomic Quantum Fluids 2, Issue 4 (2010)

81. T. Juffmann, S. Truppe, P. Geyer, S. Deachapunya, H. Ulbricht and M. Arndt
Wave and Particle in Molecular Interference Lithography
Phys. Rev. Lett. 103, 263601 (2009), DOI: 10.1103/PhysRevLett.103.263601
PRL: Editor's Suggestions
APS: Selected for the Virtual Journal of Nanoscale Science & Technology, Vol.11 (2010)
APS: Selected for the Virtual Journal of Atomic Quantum Fluids Vol. 2 (1) (2010)

82. M. Arndt, M. Aspelmeyer and A. Zeilinger
How to extend quantum experiments

Fortschr. Phys.57, **1153 – 1162 (2009)**, DOI: 10.1002/prop.200900104

83. M. Arndt, T. Juffmann and V. Vedral
Quantum Physics Meets Biology
HFSP Journal 3, 386-400 (2009), DOI: 10.2976/1.3244985
APS: Selected for the Virtual Journal of Quantum Information January 10 (2010)
APS: Selected for the Virtual Journal of Biological Physics Research January 15, (2010)

84. W. B. Case, M. Tomandl, S. Deachapunya and M. Arndt
Realization of Optical Carpets in the Talbot and Lau Configurations
Optics Express ,1720966–20974 (2009), DOI: 10.1364/OE.17.020966

85. M. Marksteiner, A. Divochiy, M. Sclafani, P. Haslinger, H. Ulbricht, Al Korneev, A. Semenov, G. Gol'tsman and M. Arndt
A Superconducting NbN detector for neutral nanoparticles
Nanotechnology20, 455501 (2009), DOI: 10.1088/0957-4484/20/45/455501

86. M. Marksteiner, P. Haslinger, M. Sclafani, H. Ulbricht and M. Arndt
UV and VUV ionization of organic molecules, clusters and complexes
J. Phys. Chem. A113 (37), pp. 9952–9957 (2009), DOI:10.1021/jp905039f

87. K. Hornberger, S. Gerlich, H. Ulbricht, L. Hackermüller, S. Nimmrichter, I. V. Goldt, O. Boltalina and M. Arndt
Theory and experimental verification of Kapitza-Dirac-Talbot-Lau interferometry
New J. Phys.11, 043032 (2009), DOI:10.1088/1367-2630/11/4/043032
IOP select, April 2009

88. Amelino-Camelia et al.
GAUGE: the GrAnd Unification and Gravity Explorer
Exper. Astron., 23, 549-572 (2009), DOI: 10.1007/s10686-008-9086-9

89. Ertmer, W. et al.
Matter wave explorer of gravity (MWXG)
Exper. Astron.23, 611-649 (2008), DOI: 10.1007/s10686-008-9125-6

90. S. Nimmrichter, K. Hornberger, H. Ulbricht and M. Arndt
Absolute absorption spectroscopy based on molecule interferometry
Phys. Rev. A78, 063607 (2008), DOI: 10.1103/PhysRevA.78.063607
also “Virtual Journal of Nanoscale Science & Technology”

91. S. Gerlich, M. Gring, H. Ulbricht, K. Hornberger, J. Tüxen, M. Mayor and M. Arndt
Matter-Wave Metrology as a Complementary Tool for Mass Spectrometry
Angew. Chem. Int. Ed.47, 6195 –6198, (2008), DOI 10.1002/anie.200801942
Angew. Chem. 120, 6290 –6293 (2008)
VIP paper and Cover Page at Angew. Chemie

92. M. Marksteiner, P. Haslinger, H. Ulbricht, M. Sclafani, H. Oberhofer, C. Dellago and M. Arndt
Gas-phase formation of large neutral alkaline-earth metal tryptophan complexes
J. Am. Soc. Mass. Spectrom.19, 1021 – 1026 (2008), DOI: 10.1016/j.jasms.2008.04.028

93. A. Stefanov, M. Berninger and M. Arndt
A novel design for electric field deflectometry on extended molecular beams
Meas. Sci. Technol.19055801 (2008), DOI: 10.1088/0957-0233/19/5/055801

94. H. Ulbricht, M. Berninger, S. Deachapunya, A. Stefanov and M. Arndt
Gas phase sorting of fullerenes, polypeptides and carbon nanotubes
Nanotechnology 19, 045502 (2008), DOI: 04550210.1088/0957-4484/19/04/045502
Nanotechweb.org *labtalk* 1/2008

95. S. Deachapunya, P. J. Fagan, A. G. Major, E. Reiger, H. Ritsch, A. Stefanov, H. Ulbricht and M. Arndt
Slow beams of massive molecules
Eur. Phys. J. D46, 307 (2008), DOI: 10.1140/epjd/e2007-00301-8

96. L. Hackermüller, K. Hornberger, S. Gerlich, M. Gring, H. Ulbricht and M. Arndt
Optical polarizabilities of large molecules measured in near-field interferometry
Appl. Phys. B89, 469 – 473 (2007), DOI: 10.1007/s00340-007-2873-6

97. S. Gerlich, L. Hackermüller, K. Hornberger, A. Stibor, H. Ulbricht, F. Goldfarb, T. Savas, M. Müri, M. Mayor and M. Arndt
A Kapitza-Dirac-Talbot-Lau interferometer for highly polarizable molecules
Nature Physics 3, 711 (2007), DOI:10.1038/nphys701
Research highlights by NATURE & NATURE PHYSICS (8/2007)

98. M. Berninger, A. Stefanov, S. Deachapunya and M. Arndt
Polarizability measurements in a molecule near-field interferometer
Phys. Rev. A. 76,013607 (2007), DOI: 10.1103/PhysRevA.76.013607
APS selected: Virtual Journal of Nanoscale Science & Technology, Vol.16No.4 (2007)

99. S. Deachapunya, A. Stefanov, M. Berninger, H. Ulbricht, E. Reiger, N. L. Doltsinis and M. Arndt
Thermal and electrical properties of porphyrin derivatives and their relevance for molecule interferometry
J. Chem. Phys. 126, 164304 (2007), DOI: 10.1063/1.2721563

100. N. Gotsche, H. Ulbricht and M. Arndt
UV-VIS absorption spectroscopy of large molecules for applications in matter wave interferometry
Laser Physics 17, No. 4, 583–589 (2007), DOI: 10.1134/S1054660X07040433

101. E. Reiger, L. Hackermüller, M. Berninger and M. Arndt
Exploration of gold nanoparticle beams for matter wave interferometry
Opt. Comm. 264, 326-332 (2006), DOI:10.1016/j.optcom.2006.02.060

102. M. Marksteiner, G. Kiesewetter, L. Hackermüller, H. Ulbricht and M. Arndt
Cold Beams of Biomolecules for Quantum Optics
Acta Phys. Hung. A26/1–2, 87–94 (2006), DOI: 10.1556/APH.26.2006.1-2.12

103. M. Arndt
Quantum physics - Coherence in molecular nitrogen
Nature Physics 1, Issue 1, pp 19-20 (2005), DOI: 10.1038/nphys118

104. A. Stibor, André Stefanov, Fabienne Goldfarb, Elisabeth Reiger and Markus Arndt
A scalable optical detection scheme for matter wave interferometry
New Journal of Physics 7, 224 (2005), DOI: 10.1088/1367-2630/7/1/224
"New Journal of Physics" highlight of 2005

105. K. Hornberger, L. Hackermüller and M. Arndt
Influence of molecular temperature on the coherence of fullerenes in a near-field interferometer
Physical Review A71, Issue 2A, pp 216-223 (2005), DOI: 10.1103/PhysRevA.71.023601

106. A. Stibor, K. Hornberger, L. Hackermüller, A. Zeilinger and M. Arndt
Talbot-Lau interferometry with fullerenes: Sensitivity to inertial forces and vibrational dephasing
Laser Physics 15,10-17 (2005)

107. M. Arndt, K. Hornberger and A. Zeilinger
Probing the limits of the quantum world
Physics World18, 35 -40 (2005), DOI: 10.1088/2058-7058/18/3/28

108. M. Arndt, L. Hackermüller and E. Reiger
Interferometry with Large Molecules: Exploration of Coherence, Decoherence and Novel Beam Methods
Braz. J. of Phys.35, 216-223,(2005), DOI: 10.1590/S0103-97332005000200004

109. L. Hackermüller, K. Hornberger, B. Brezger, A. Zeilinger and M. Arndt
Decoherence of matter waves by thermal emission of radiation
NATURE 427, 711–714 (2004), DOI: 10.1038/nature02276
IOP physics highlight & APS physics news of 2004

110. A. Chatzidimitriou-Dreismann and M. Arndt
Quantum Mechanics and Chemistry: The relevance of nonlocality and entanglement for molecules
Angew. Chem.116, 146–147 (2004), DOI: 10.1002/anie.200320079

111. A. Stefanov, A. Stibor, A. Dominguez-Clarimon and M. Arndt
Sublimation enthalpy of dye molecules measured using fluorescence
J. of Chem. Phys. 121, Issue 14, pp 6935 – 6940 (2004), DOI: 10.1063/1.1792551

112. K. Hornberger, J. Sipe and M. Arndt
Theory of decoherence in a matter wave Talbot-lau interferometer
Physical ReviewA 70, 053608 (2004), DOI: 05360810.1103/PhysRevA.70.053608

113. L. Hackermüller, S. Uttenthaler, K. Hornberger, E. Reiger, B. Brezger, A. Zeilinger and M. Arndt
Wave nature of biomolecules and fluorofullerenes
Phys. Rev. Lett.91, 90408 (2003), DOI: 10.1103/PhysRevLett.91.090408
- ***NATURE News, 5th September 2003***
- **IOP *Physics News, 5th September 2003***
- ***Virtual Journal of Nanoscale Science & Technology, 8 (10), September 8 (2003)***

114. K. Hornberger, S. Uttenthaler, B. Brezger, L. Hackermüller, M. Arndt and A. Zeilinger
Collisional Decoherence Observed in MatterWave Interferometry
Phys. Rev. Lett. 90, 160401 (2003), DOI: 10.1103/PhysRevLett.90.160401
APS : Virtual Journal of Nanoscale Science & Technology, 7 (18), May 5,(2003)

115. L. Hackermüller, K. Hornberger, B. Brezger, A. Zeilinger and M. Arndt
Decoherence in a Talbot Lau interferometer: the influence of molecular scattering
Appl. Phys. B77, 781 - 787 (2003), DOI: 10.1007/s00340-003-1312-6

116. O. Nairz, M. Arndt, A. Zeilinger
Quantum Interference Experiments with Large Molecules
Am. J. Phys. 71,319 (2003), DOI: 10.1119/1.1531580
Virtual Journal of Nanoscale Science & Technology, 7 (12), March 24, (2003)

117. B. Brezger, M. Arndt and A. Zeilinger
Concepts for near-field interferometers with large molecules
J. Opt. B: Quantum Semiclass. Opt.5, Issue 2, ppS82-S89 (2003),
DOI: 10.1088/1464-4266/5/2/362

118. O. Nairz, M. Arndt and A. Zeilinger
Experimental verification of the Heisenberg uncertainty principle for fullerene molecules
Phys. Rev. A. 65, pp. 032109, (2002), DOI: 10.1103/PhysRevA.65.032109

119. B. Brezger, L.Hackermüller, S. Uttenthaler, J. Petschinka, M. Arndt and A. Zeilinger
Matter-Wave Interferometer for Large Molecules
Phys. Rev. Lett. 88, pp. 100404, (2002), DOI: 10.1103/PhysRevLett.88.100404
APS News update 2002

120. O. Nairz, B. Brezger, M. Arndt and A. Zeilinger
Diffraction of complex molecules by structures made of light
Phys. Rev. Lett. 87, 160401/1-4 (2001), DOI: 10.1103/PhysRevLett.87.160401
Research highlights by NATURE

121. M. Arndt, O. Nairz, J. Petschinka and A. Zeilinger
High Contrast Interference with C60 and C70
C. R. Acad. Sci. Paris, t.2, Série IV, p. 581-585 (2001), DOI: 10.1016/S1296-2147(01)01189-1

122. S. Franke-Arnold, M. Arndt and A. Zeilinger
Magneto-optical effects with cold Lithium atoms
J. Phys. B.: At. Mol. Opt. Phys. 34, **2527-2536 (2001)**, DOI: 10.1088/0953-4075/34/12/316

123. O. Nairz , M. Arndt and A. Zeilinger
Experimental Challenges in Fullerene Interferometry
Journal of Modern Optics 47, 2811-2821 (2000), DOI: 10.1080/09500340008232198

124. M. Arndt , O. Nairz, J. Voss-Andreae, C. Keller, G. van der Zouw and A. Zeilinger
Wave-particle duality of C60 molecules

Nature 401, 680-682, 14.October (1999), DOI:10.1038/44348
APS physics highlight of 1999

125. P. Sziftgiser, D. Guéry-Odelin, P. Desbiolles, J. Dalibard, M. Arndt and A. Steane
Interferometry and Dissipative Optics with Atoms
Acta Physica Polonica, 93(1), 197-209 (1998)

126. M. Arndt, M. Ben Dahan, D. Guéry-Odelin, M. Reynolds and J.Dalibard
Observation of a zero-energy resonance in Cs-Cs collisions
Phys.Rev. Lett. 79, Issue 4 pp.625-628 (1997), DOI: 10.1103/PhysRevLett.79.625

127. P. Desbiolles, M. Arndt, P. Szriftgiser and J. Dalibard
Dissipative atom optics
Journal of Modern Optics. 44, p.1827-36 (1997), DOI: 10.1080/09500349708231849

128. P. Szriftgiser, D. Guéry-Odelin, M. Arndt and J. Dalibard
Atomic wave diffraction and interference using temporal slits
Phys. Rev. Lett.77, 4-7, (1996), DOI: 10.1103/PhysRevLett.77.4

129. P. Desbiolles, M. Arndt, P. Szriftgiser and J. Dalibard
Elementary Sisyphus process close to a dielectric surface
Phys. Rev. A. 54, 4292-4298 (1996), DOI: 10.1103/PhysRevA.54.4292

130. M. Arndt, P. Szriftgiser, J. Dalibard and A. Steane
Atom optics in the time domain
Phys. Rev. A 53, 3369-3378, (1996), DOI: 10.1103/PhysRevA.53.3369

131. S. Lang, M. Arndt, T.W. Hänsch, S.I. Kanorsky, S.Lücke, S.B. Ross and A. Weis
Local field effects in the spectroscopy of Cs atoms trapped in solid 4He
Low. Temp. Phys. 22(2),129-130 (1996), Fizika Nizkikh Temperatur, 22(2), 171-173 (1996)

132. M. Arndt, S. I. Kanorsky, A. Weis and T. W. Hänsch
Long Electronic Spin Relaxation Times of Cs Atoms in Solid 4He
Phys. Rev. Lett. 74, 1359-1362 (1995), DOI: 10.1103/PhysRevLett.74.1359

133. A. Buchleitner, D. Delande, J. Zakrzewski, R. N. Mantegna, M. Arndt and H. Walther
Multiple Time Scales in the Microwave Ionization of Rydberg Atoms
Phys. Rev. Lett. 75, 3818-3821 (1995), DOI: 10.1103/PhysRevLett.75.3818

134. S. Lang, S. I. Kanorsky, M. Arndt, S. B. Ross, T. W. Hänsch and A. Weis
The Hyperfine Structure of Cs Atoms in the b.c.c. Phase of Solid 4He
Europhys. Lett. 30, 233-237 (1995), DOI: 10.1209/0295-5075/30/4/008

135. O. Benson, A. Buchleitner, G. Raithel, M. Arndt, R. N. Mantegna and H. Walther
From Coherent to Noise-Induced Microwave Ionization of Rydberg Atoms
Phys. Rev. A 51, 4862-4876 (1995), DOI: 10.1103/PhysRevA.51.4862

136. M. Arndt, R. Dziewior, S. I. Kanorsky, A. Weis and T. W. Hänsch
Implantation and spectroscopy of metal atoms in solid helium
Z. Phys. B. 98, 377-381 (1995), DOI: 10.1007/BF01338409

137. A.R. Weis, S. I. Kanorsky, M. Arndt and T. W. Hänsch
Spin physics in solid helium: experimental results and applications
Z. Phys.B. 98, 359-362 (1995), DOI: 10.1007/BF01338405

138. S.I. Kanorsky, A. Weis, M. Arndt, R. Dziewior and T. W. Hänsch,
Pressure shift of atomic resonance lines in liquid and solid Helium
Z. Phys. B. 98, 371-376 (1995), DOI: 10.1007/BF01338408

139. P. Szriftgiser, M. Arndt, P. Desbiolles, A. Steane and J. Dalibard
Atomic cavities
Annales De Physique 20 Issue: 5-6, pp. 681-686 (1995), DOI:10.1051/anphys:199556061

140. S.I. Kanorsky, M. Arndt, R. Dziewior, A. Weis and T. W. Hänsch
Optical Spectroscopy of Atoms trapped in Solid Helium
Phys. Rev. B 49, 3645-3647 (1994), DOI: 10.1103/PhysRevB.49.3645

141. L. Sirko, M. Arndt, P. M. Koch and H. Walther
Microwave ionization of Rb Rydberg atoms: Frequency dependence
Phys. Rev. A 49, 3831-3841 (1994), DOI: 10.1103/PhysRevA.49.3831

142. S.I. Kanorsky, M. Arndt, R. Dziewior, A. Weis and T. W. Hänsch
Pressure shift and broadening of the resonance line of barium atoms in liquid helium
Phys. Rev. B 50, S. 6296 -6302 (1994), DOI: 10.1103/PhysRevB.50.6296

143. M. Arndt, S.I. Kanorsky, A. Weis and T. W. Hänsch
Can paramagnetic atoms in superfluid helium be used to search for permanent electric dipole moments
Phys. Lett. A 174, S. 298 - 303 (1993), DOI: 10.1016/0375-9601(93)90142-M

144. M. Arndt, A. Buchleitner, R. N. Mantegna, and H.Walther
Experimental Study of Quantum and Classical Limits in Microwave Ionization of Rubidium Rydberg Atoms
Phys. Rev. Lett. 67, S. 2435 - 2438 (1991), DOI: 10.1103/PhysRevLett.67.2435

B) Contributions to books

145. M. Arndt, S. Gerlich, K. Hornberger
Experimental Decoherence in Molecule Interferometry.
In: From Quantum to Classical. Essays in Honour of H.-Dieter Zeh.
ed. C. Kiefer, Springer, Cham (2022)
DOI: 10.1007/978-3-030-88781-0

146. S. Gerlich, Y.Y. Fein, A. Shayeghi, V. Köhler, M. Mayor, M. Arndt
Otto Stern's Legacy in Quantum Optics: Matter Waves and Deflectometry. In: Friedrich B., Schmidt-Böcking H. (eds) Molecular Beams in Physics and Chemistry. Springer, Cham. (2021)
DOI: 10.1007/978-3-030-63963-1_24

147. S. Gerlich, Y.Y. Fein, M. Arndt,
Interferometric tests of wave-function collapse
in "Do Wave Functions Jump?: Perspectives of the Work of GianCarloGihardi" eds. Valia Allori, Angelo Bassi, Detlef Dürr, Nino Zanghi, Springer International Publishing (2020), DOI: 10.1007/978-3-030-46777-7

148. S. Gerlich, S. Kuhn, A. Shayeghi, M. Arndt,
The de Broglie Wave-Nature of Molecules, Clusters and Nanoparticles
in "21st Century Nanoscience - A Handbook: Nanophysics Sourcebook" ed. Klaus D. Sattler, CRC Press Taylor & Francis Group (2019), DOI: 10.1201/9780367333003

149. C. Brand, U. Sezer, S. Eibenberger, M. Arndt,
Matter-wave physics with nanoparticles and biomolecules
in: "Current Trends in Atomic Physics" eds. Antoine Browaeys, Thierry Lahaye, Trey Porto, Charles S. Adams, Matthias Weidemüller, Leticia F. Cugliandolo, Oxford University Press (2019), DOI: 10.1093/oso/9780198837190.001.0001

150. J. Millen, S. Kuhn, A. Kosloff, F. Patolsky and M. Arndt,
Cooling and manipulation of nanoparticles in high vacuum
Proc. SPIE, Optical Trapping and Optical Micromanipulation XIII, 9922, 99220C-99228 (2016), DOI: 10.1117/12.2238753

151. M. Arndt, N. Dörre, S. Eibenberger, P. Haslinger, J. Rodewald, K. Hornberger, S. Nimmrichter and M. Mayor
Matter-wave interferometry with composite quantum objects
Proc. Varenna Summer School, Course 188, SocietàItaliana di Fisica (2014)
Printed 2014, http://arxiv.org/abs/1501.07770

152. M. Arndt
Über die Bedeutung von Grundlagenforschung und Wissenschaftsmanagement in Österreich … und über Entscheidungen, die wir noch heute treffen sollten
in: "Wa(h)re Forschung? Science – Change of Paradigms?" Symposium 20.-21. Mai 2010 Anlässlich der Feierlichen Sitzung der Österreichischen Akademie der Wissenschaften (ÖAW: Forschung und Gesellschaft 2), Wien, 99-113 (2011)

153. M. Arndt and K. Hornberger
Quantum interferometry with complex molecules,
Proceedings of the International school of physics "E. Fermi", Vol. 171
Quantum Coherence in Solid State Systems
2009, IOS Press, 103-125, DOI: 978-1-60750-039-1-1

154. M. Arndt
Mesoscopic Quantum Phenomena
Contribution to the 'Compendium of Quantum Physics', Ed. F. Weinert, D. Greenberger et al. in print (2009)Compendium of Quantum Physics
2009, 379-384, DOI: 10.1007/978-3-540-70626-7_118

155. M. Arndt
Semiclassical Models
Contribution to the 'Compendium of Quantum Physics', Ed. F. Weinert, D. Greenberger et al.
Compendium of Quantum Physics
2009, 697-701, DOI: 10.1007/978-3-540-70626-7_197

156. M. Arndt, L. Hackermüller, K. Hornberger and A. Zeilinger
Coherence and decoherence experiments with fullerenes
in: "Decoherence, Entanglement, and Information Protection in Complex Quantum Systems'', Vladimir M. Akulin, A. Sarfati, G. Kurizki (Eds.), Kluwer, Amsterdam
189, 329-352 (2005)

157. M. Arndt, T. F. Gallagher, R. G. Fernandez, M. Leibscher, T. Opatrny and P. Pillet
Internal-Translational Entanglement and Interference in Atoms and Molecules
in: "Decoherence, Entanglement and Information Protection in Complex Quantum Systems" Eds: V. M. Akulin, A. Sarfati, G. Kurizki and S. Pellegrin
Kluwer Academic Boston (2005)

158. M. Arndt and A. Zeilinger
Heisenberg's uncertainty and matter wave interferometry with large molecules
pp. 35–52, in: Fundamental Physics, Heisenberg and Beyond
G. W. Buschhorn, J. Wess (Eds), Springer Berlin (2004)

159. M. Arndt, L. Hackermüller, K. Hornberger and A. Zeilinger
Organic molecules and decoherence experiments in a molecule interferometer
pp. 1–10 in: Multiscale Methods in Quantum Mechanics, P. Blanchard, G. Dell'antonio (Eds) Birkhäuser, Boston (2004)

160. M. Arndt and A. Zeilinger
Wave-particle experiments with large molecules
in: J. S. Al-Khalili, Quantum: A guide for the perpelexed", Weidenfeld & Nicolson, (2003)

161. M. Arndt, O. Nairz and A. Zeilinger
Wave-Particle Duality
in: Year Book of Science & Technology, McGraw-Hill (2002)

162. M. Arndt, O. Nairz and A. Zeilinger
Interferometry with macromolecules: Quantum paradigms tested in the mesoscopic world
pp. 333 – 351 in: "Quantum [Un] Speakables, From Bell Quantum Information", R. A. Bertlmann, A. Zeilinger (eds.), Springer, Berlin (2002)

163. M. Arndt, O. Nairz, G. van der Zouw and A. Zeilinger
Towards Quantum Optics of Macromolecules
Yearbook of the Institute Vienna Circle, ed. D. Greenberger, A. Zeilinger , p. 221-224, Kluwer Academic, Dordrecht (1999)

C) Conference Proceedings

164. Y. Y. Fein, S. Gerlich, A. Shayeghi, P. Geyer, F. Kialka, V. Köhler, M. Mayor, M. Arndt
Universal matter-wave interferometry as a sensor in atomic physics and physical chemistry
DOI: 10.1117/12.2586476 **(2021)**

165. C. Brand, T. Susi, J. Kotakoski, M. Arndt, M. Debiossac, F. Aguillon, P. Roncin
Diffraction of 80 eV hydrogen through suspended graphene
Journal of Physics: Conference Series 1412 (2020) 202036, DOI: 10.1088/1742-6596/1412/20/202036

166. M. Arndt, A. Bassi, D. Giulini, A. Heidmann and J.-M. Raimond
Fundamental frontiers of quantum science and technology
Procedia Computer Science 2011, DOI: 10.1016/j.procs.2011.12.024

167. M. Arndt, S. Gerlich, S. Eibenberger, P. Fagan, J. Tüxen and M. Mayor
Quantum interference experiments with organic molecules: Information about internal states of spatially quantum delocalized molecules
Abstracts of Papers of the Am. Chem. Soc. 241, Annaheim, CA, March 27th-31st 2011

168. S. Eibenberger, S. Gerlich, M. Tomandl et al.
Matter wave interferometry: exploring the importance of the internal molecular properties
Source: Conference on Lasers & Electro-Optics Europe & 12th European Quantum Electronics Conference CLEO EUROPE/EQEC, ICM Munich, Germany, May 22-26th 2011
Pages: 1 pp. DOI: 10.1109/cleoe.2011.5943412 Published: 2011

169. M. Arndt, H. Ulbricht, A. Major, et al.
Molecular lithography - a quantum optical approach
Source: Conference on Lasers & Electro-Optics Europe & 11th European Quantum Electronics Conference (CLEO/EQEC), Munich, Germany, June 14-19th 2009
Pages: 1 pp. DOI: 10.1109/CLEOE-EQEC.2009.5192061 Published: 01 2009

170. M. Arndt, M. Berninger, S. Deachapunya, S. Gerlich, L. Hackermüller, A. G. Major, M. Marksteiner, A. Stéfanov and H. Ulbricht
On the prospects of interferometry and deflectometry for characterizing large molecules
Eur. Phys. J. Special Topics 159, 1–9 (2008)

171. S. Gerlich, L. Hackermueller, F. Goldfarb, K. Hornberger, T. Savas, A. Stibor, H. Ulbricht and M. Arndt
A novel type of matter-wave interferometer for molecules
CLEO/Europe - IQEC 2007. München 1110 (2007), Standard Book Number: 978-1-4244-0930-3

172. M. Arndt
Quantum Information: Philosophical, Mathematical and Experimental Perspectives
Quantum Information Processing, Vol. 5, 227-232 (2006)

173. K. Hornberger and M. Arndt
Environmental localization of matter waves
Source: Entanglement and Decoherence: Mathematics and Physics of Quantum Information and Computation, ed. by F. De Martini, G. Dell'Antonio, and S. Albeverio,
Oberwolfach Reports 2, 219-221 (2005)

174. A. Stibor, A. Stefanov, F. Goldfarb, S. Deachapunya, A. Zeilinger and M. Arndt
Fluorescence methods for matter interferometry with nanosized objects
European Quantum Electronics Conference (IEEE Cat. No. 05TH8796) p.271|xviii+374 (2005)

175. F. Goldfarb, S. Deachapunya, A. Stefanov, A. Stibor, E. Reiger and M. Arndt
Fluorescence of surface adsorbed dyes: Investigation of a new detector for molecule interferometry
J. Phys.: Conf. *Ser.* 19, 125-133 (2005)

176. L. Hackermüller, B. Brezger, K. Hornberger, S. Uttenthaler, E. Reiger, M. Arndt and A. Zeilinger
Decoherence studies using interferometry of massive molecules
Proc EQEC 326 (2003): ISBN: 0-7803-7733-8

177. L. Hackermüller, B. Brezger, K. Hornberger, S. Uttenthaler, E. Reiger, M. Arndt and A. Zeilinger
Wave-particle duality with biomolecules and fluorinated fullerenes: A new record in matter wave interferometry
EQEC Conf. Digest (2003)

178. M. Arndt, L. Hackermüller and A. Zeilinger
Molecule Interferometry as a potential tool for nanoctructuring applications
Source: Proceedings of the 4th EC/NSF Workshop on Nanotechnology, Tools and Instruments for Research and Manufacturing, Grenoble, France, June 12.-13. (2002)

179. M. Arndt, O. Nairz, J. Petschinka, J. Voss-Andreae, G. van der Zouw, C. Keller and A. Zeilinger
Coherence and Decoherence in de Broglie Interference of Fullerenes
IQEC 2000, Conf. Digest, p. 115, Nice, September (2000)

180. M. Arndt, P. Desbiolles, D. Guery-Odelin, A. Steane, P. Szriftgiser and J. Dalibard
Atom optics and interferometry with atomic mirrors
Atom Optics Conference, SAN JOSE, CA, February 10-12th 1997
ATOM OPTICS, In Series: Proc. SPIE 2995, 174-181 (1997), DOI: 10.1117/12.273755

181. A. Weis, S. Lang, S. I. Kanorsky, M. Arndt, S.B. Ross and T.W. Hänsch
Long live the spin: cesium in solid helium

Proc. 12th Int. Conf. Laser Spectr 382-5 (1996)

182. M. Arndt, J. Dalibard, P. Desbiolles, W. Hänsel, P. Lemonde, O. Morice, E. Peik, H. Perrin, J. Reichel, C. Salomon, A. Steane and P. Szriftgiser
Atomic Cavities and Traps
Proc. 5th Symp. Freq. Stand. Metr.: Woods Hole, MA, USA, 231-42 (1996)

183. P. Szriftgiser, M. Arndt, P. Desbiolles et al.
Atomic cavities
4th Colloquium on Lasers and Quantum Optics Location: Ecole Polytechnique Nov. 1995 Annales De Physique: 20, 681-68 (1995), DOI: 10.1051/Anphys: 199556061

184. A. Weis, S. Kanorsky, S. Lang, M. Arndt, S. B. Ross, S. Lücke and T. W. Hänsch,
Old and new spin physicswithatoms in solidhelium
Proc ICONO 95, SPIE Vol. 2799 p. 22-29, June 1995, St. Petersburg

D) Articles for a general physics audience

185. M. Arndt
Viewpoint: Free-Falling Interferometry
Physics 6, 23 (2013), DOI: 10.1103/Physics.6.23

186. M. Arndt
Exploring the limits of the quantum superposition principle
Physik Journal 12, 126, (2013)

187. M. Aspelmeyer and M. Arndt
Quantenphysik mit massereichen Objekten
Spektrum der Wissenschaft 12/12 40-44 (2012)

188. M. Arndt, M. Oberthaler and J. Schmiedmayer
Hamlet in der Quantenwelt.
Spektrum der Wissenschaft 1/12 40-44 (2012)

189. J. Schmiedmayer and M. Arndt
Embracing quantum metrology with wide arms
APS Physics September 19th 2011

190. M. Arndt, S. Gerlich, K. Hornberger and M. Mayor
Quanteninterferometrie mit komplexen Molekülen- Wie man Information über das Innenleben von Molekülen gewinnt, deren Ort man nicht kennt
Physik Journal 9 (2010), Nr. 10, 37-43

191. S. Gerlich and M. Arndt
Quantenfußball und Quantenspeerwurf: Physikspiele mit molekularen Materiewellen
Praxis der Naturwissenschaften, Heft 6(58), 5-12 (2009) und Plus Lucis (February 2009)

192. M. Arndt, L. Hackermüller and K. Hornberger
Wann wird ein Quantenobjekt klassisch?
Physik in unserer Zeit 37, 24 – 29 (2006)

193. M. Arndt, L. Hackermüller and K. Hornberger
Interferenzexperimente mit molekularen Quantenwellen
Physica plus, in English and Hebrew (2006)

194. O. Nairz, M. Arndt and A. Zeilinger
Doświadczenia z interferencją kwantową dużych cząsteczek
Postepy Fizyki 56, 114-121 (2005)

195. M. Arndt
Wann uns Quantenteilchen klassisch erscheinen,
Physik in unserer Zeit 35, 113-114 (2004)

196. M. Arndt
Freie Elektronen an sichtbarem Licht gebeugt
Physikalische Blätter, 57 (11), p. 20 (2001)

197. M. Arndt
Quantenoptik mit Molekülen und Clustern
DieUniversität.at 17.8.2001

198. M. Arndt und A. Zeilinger
Wo ist die Grenze der Quantenwelt?
Physikalische Blätter, 56, No. 3, 69-71, (2000)

199. M. Arndt
Quanteninterferenzen großer Moleküle
Mitteilungsblatt der ÖPG, Vol. 4, pp. 8-17, (2000)

200. M. Arndt and O. Nairz
Grenzgänger: Welle-Teilchen Dualismus von C60
Plus Lucis 3, 5-7 (1999)

201. M. Arndt
Optische Spektroskopie und Magnetresonanz an Metallatomen in fl. und festem 4-He
MPQ-Report 197, Dissertation, Garching (1995)

E) Preprints

202. Y. Y. Fein, S. Pedalino, A. Shayeghi, F. Kialka, S. Gerlich, M. Arndt
Nanoscale magnetism probed in a matter-wave interferometer
https://arxiv.org/abs/2203.11866 (2022)

203. R. Kaltenbaek, M. Arndt, M. Aspelmeyer, P. F. Barker, A. Bassi, J. Bateman, A. Belenchia, J. Bergé, C. Braxmaier, S. Bose, B. Christophe, G. D. Cole, C. Curceanu, A. Datta, M. Debiossac, U. Delic, L.

Diosi, A. A. Geraci, S. Gerlich, C. Guerlin, G. Hechenblaikner, A. Heidmann, S. Herrmann, K. Hornberger, U. Johann, N. Kiesel, C. Lämmerzahl, T. W. LeBrun, G. J. Milburn, J. Millen, Makan Mohageg, D. C. Moore, Gavin W. Morley, S. Nimmrichter, L. Novotny, D. K. L. Oi, M. Paternostro, C. J. Riedel, M. Rodrigues, L. Rondin, A. Roura, W. P. Schleich, T. Schuldt, B. A. Stickler, H. Ulbricht, C. Vogt, L. Wörner
MAQRO -- BPS 2023 Research Campaign Whitepaper
https://arxiv.org/abs/2202.01535 (2022)

F) Patents

204. P. Geyer, M. Arndt, U. Sezer
Protective eyewear for laser radiation.
Patent Application Publication WO2017182431A1 (18.4.2016).

205. H. Ulbricht, N. Gotsche and M. Arndt
Devices for and methods of handling nanowires
Patent Application Publication No. WO2009/000285 A1 (31.12.2008)