

Selected Publications by Univ. Prof. Dr. Markus Arndt

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1. L. Mairhofer, S. Eibenberger, J. P. Cotter, M. Romirer, A. Shayeghi, M. Arndt
Quantum-assisted metrology of neutral vitamins in the gas-phase
Angew. Chem. Int. Ed. (2017) DOI: 10.1002/anie.201704916
2. C. Brand, M. Sclafani, C. Knobloch, Y. Lilach, T. Juffmann, J. Kotakoski, C. Mangler, A. Winter, A. Turchanin, J. Meyer, O. Cheshnovsky, M. Arndt
An atomically thin matter-wave beam splitter
Nature Nanotechnology 10, 845 - 848 (2015); DOI: 10.1038/nnano.2015.179
[Nature Nano: News & Views by P. Treutlein; Highlighted by Physics World](#)
3. Markus Arndt & Christian Brand
Interference of atomic clocks
Science 349, 1168-1169 (2015); DOI: 10.1126/science.aad0683
4. 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
5. J. P. Cotter, S. Eibenberger, L. Mairhofer, X. Cheng, P. Asenbaum, M. Arndt; K. Walter, S. Nimmrichter, K. Hornberger
Coherence in the presence of absorption and heating in a molecule interferometer
Nature Communications 6, 7336 (2015); DOI: 10.1038/ncomms8336
6. 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](#)
7. 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](#)
8. 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
9. Markus Arndt & Klaus Hornberger
Insight review: Testing the limits of quantum mechanical superpositions
Nature Physics 10, 271-277 (2014); DOI: 10.1038/nphys2863
10. P. Asenbaum, S. Kuhn, S. Nimmrichter, U. Sezer, M. Arndt
Cavity cooling of free silicon nanoparticles in high vacuum
Nature Communications 4, 2743 (2013); DOI: 10.1038/ncomms3743
11. 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
12. P. Haslinger, N. Dörre, P. Geyer, J. Rodewald, S. Nimmrichter & 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](#)
 13. 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 Nanotechnology **7**, 297 - 300 (2012), DOI:10.1038/nnano.2012.34
- [News & Views of Nature Nanotechnology, by B. Z. Zhao & W. Schöllkopf](#)
- [Cover page of Nature Nanotechnology May 2012,](#)
- [Among the “Best science pictures in 10 years” of Nature Nanotechnology](#)
 14. 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](#)
 15. M. Arndt
Coherence from spontaneity
Nature Physics **7**, 375–376 (2011); DOI: 10.1038/nphys1987
 16. 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 Communications **2**, 263 (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](#)
 17. 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 \(1\) \(2010\)](#)
 18. 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
- [VIP paper & Cover Page at Angewandte Chemie](#)
 19. 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 \(8/2007\)](#)
 20. M. Arndt
Quantum physics - Coherence in molecular nitrogen
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21. 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
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22. 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](#)
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- [Virtual Journal of Nanoscale Science & Technology, 8 \(10\), September 8 \(2003\)](#)

23. K. Hornberger, S. Uttenthaler, B. Brezger, L. Hackermüller, M. Arndt and A. Zeilinger
Collisional Decoherence Observed in MatterWave Interferometry
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24. B. Brezger, L.Hackermüller, S. Uttenthaler, J. Petschinka, M. Arndt, A. Zeilinger
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Nature 401, 680-682, 14.October (1999); DOI:10.1038/44348
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27. M. Arndt, M. Ben Dahan, D. Guéry-Odelin, M. Reynolds, 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

28. P. Szriftgiser, D. Guéry-Odelin, M. Arndt and J. Dalibard
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Phys. Rev. Lett. 77, 4-7, (1996), DOI: 10.1103/PhysRevLett.77.4

29. M. Arndt, S. I. Kanorsky, A. Weis, and T. W. Hänsch
Long Electronic Spin Relaxation Times of Cs Atoms in Solid 4He
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30. A. Buchleitner, D. Delande, J. Zakrzewski, R. N. Mantegna, M. Arndt and H. Walther
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