

## Selected Publications by Univ. Prof. Dr. Markus Arndt

Quantum Nanophysics Group, Faculty of Physics, University of Vienna

1. 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
2. Markus Arndt & Christian Brand  
*Interference of atomic clocks*  
**Science** **349**, 1168-1169 (2015); DOI: 10.1126/science.aad0683
3. 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
4. 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
5. 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
6. 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
7. Markus Arndt & Klaus Hornberger  
*Insight review: Testing the limits of quantum mechanical superpositions*  
**Nature Physics** **10**, 271-277 (2014); DOI: 10.1038/nphys2863
8. 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
9. 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
10. 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



11. 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 “Best science pictures in 10 years” of Nature Nanotechnology
12. 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
13. M. Arndt  
*Coherence from spontaneity*  
**Nature Physics 7, 375–376 (2011)**; DOI: 10.1038/nphys1987
14. 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 5<sup>th</sup> 2011,  
Highlight by Nature April 5<sup>th</sup> 2011  
TOP100 Science Stories in Discover Magazine 2/2012
15. 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)*
16. 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  
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17. 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)
18. M. Arndt  
*Quantum physics - Coherence in molecular nitrogen*  
**Nature Physics 1, 19-20 (2005)**, DOI: 10.1038/nphys118
19. 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*
20. 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)
21. 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)
22. B. Brezger, L.Hackermüller, S. Uttenthaler, J. Petschinka, M. Arndt, 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*
23. O. Nairz, B. Brezger, M. Arndt, 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*
24. 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*
25. 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
26. 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
27. 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
28. 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