

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

Quantum Nanophysics Group, Faculty of Physics, University of Vienna

- 1) 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
- 2) Y.Y. Fein, P. Geyer, P. Zwick, F. Kiałka, S. Pedalino, M. Mayor, S. Gerlich, M. Arndt,  
*Quantum superposition of molecules beyond 25 kDa,*  
**Nature Physics** **15**, 1242 (2019). DOI 10.1038/s41567-019-0663-9
- 3) 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).
- 4) 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)
- 5) C. Brand, B.A. Stickler, C. Knobloch, A. Shayeghi, K. Hornberger, M. Arndt,  
*Conformer Selection by Matter-Wave Interference,*  
**Phys. Rev. Lett.** **121**, 173002 (2018).
- 6) M. Debiossac, J. Schätti, M. Kriegleder, P. Geyer, A. Shayeghi, M. Mayor, M. Arndt, V. Köhler,  
*Tailored photocleavable peptides: Fragmentation and neutralization pathways in high vacuum,*  
**Phys Chem Chem Phys** **20**, 11412-11417 (2018).
- 7) S. Kuhn, B. A. Stickler, A. Kosloff, F. Patolsky, K. Hornberger, M. Arndt, J. Millen,  
*Optically driven ultra-stable nanomechanical rotor,*  
**Nature Communications** **8**, 1670 (2017)
- 8) J. P. Cotter, C. Brand, C. Knobloch, Y. Lilach, O. Cheshnovsky, M. Arndt,  
*In search of multipath interference using large molecules,*  
**Science Advances** **3**, e1602478 (2017), DOI: 10.1126/sciadv.1602478
- 9) 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.** **56**, 10947 (2017), DOI: 10.1002/anie.201704916  
**Angew. Chem. Deutsch** **56**, 11088(2017), DOI: 10.1002/ange.201704916  
High-lighted in Chemistry Views

- 10) 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
- 11) M. Arndt, C. Brand,  
*Interference of atomic clocks*,  
**Science** **349**, 1168-1169 (2015); DOI: 10.1126/science.aad0683
- 12) M. Tomandl, T. Mieling, C. Losert-Valiente Kroon, M. Hopf, M. Arndt,  
*Simulated Interactive Research Experiments as Educational Tools for Advanced Science*,  
**Scientific Reports** **5**, 14108 (2015), DOI: 10.1038/srep14108  
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- 13) S. Kuhn, P. Asenbaum, A. Kosloff, M. Sclafani, B. A. Stickler, S. Nimmrichter, K. Hornberger, O. Cheshnovsky, F. Patolsky, M. Arndt,  
*Cavity-assisted manipulation of freely rotating silicon nanorods in high vacuum*,  
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- 14) J. Kotakoski, C. Brand, Y. Lilach, O. Cheshnovsky, C. Mangler, M. Arndt, J. C. Meyer,  
*Towards two-dimensional all-carbon heterostructures via ion beam patterning of single-layer graphene*,  
**Nano Letters** **15**, 5944–5949 (2015), DOI: 10.1021/acs.nanolett.5b02063
- 15) 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
- 16) N. Dörre, J. Rodewald, P. Geyer, B. von Issendorff, P. Haslinger, M. Arndt,  
*Photofragmentation beam splitters for matter-wave interferometry*  
**Phys. Rev. Lett.** **113**, 233001 (2014). DOI: 10.1103/PhysRevLett.113.233001  
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- 17) S. Eibenberger, X. Cheng, J. P. Cotter, M. Arndt,  
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- 18) M. Arndt, K. Hornberger,  
*Insight review: Testing the limits of quantum mechanical superpositions*,  
**Nature Physics** **10**, 271-277 (2014), DOI: 10.1038/nphys2863
- 19) 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

- 20) S. Eibenberger, S. Gerlich, M. Arndt, M. Mayor, 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
- 21) 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
- 22) T. Juffmann, A. Milic, M. Müllneritsch, P. Asenbaum, A. Tsukernik, J. Tüxen, M. Mayor, O. Cheshnovsky, M. Arndt,  
*Real-time single-molecule imaging of quantum interference*  
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- 23) K. Hornberger, S. Gerlich, S. Nimmrichter, P. Haslinger, M. Arndt,  
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- 24) M. Arndt  
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- 25) S. Gerlich, S. Eibenberger, M. Tomandl, S. Nimmrichter, K. Hornberger, P. J. Fagan, J. Tüxen, M. Mayor, M. Arndt,  
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- 26) T. Juffmann, S. Truppe, P. Geyer, S. Deachapunya, H. Ulbricht, M. Arndt,  
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**Phys. Rev. Lett.** **103**, 263601 (2009). DOI: 10.1103/PhysRevLett.103.263601  
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*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)*
- 27) M. Arndt, T. Juffmann, V. Vedral,  
*Quantum Physics Meets Biology*,  
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- 29) S. Gerlich, L. Hackermüller, K. Hornberger, A. Stibor, H. Ulbricht, F. Goldfarb, T. Savas, M. Müri, M. Mayor, M. Arndt,  
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- 30) M. Arndt  
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**Nature Physics** **1**, 19-20 (2005). DOI: 10.1038/nphys118
- 31) L. Hackermüller, K. Hornberger, B. Brezger, A. Zeilinger, M. Arndt,  
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**Nature** **427**, 711–714 (2004). DOI: 10.1038/nature02276  
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- 32) L. Hackermüller, S. Uttenthaler, K. Hornberger, E. Reiger, B. Brezger, A. Zeilinger, M. Arndt,  
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- 34) Brezger, L. Hackermüller, S. Uttenthaler, J. Petschinka, M. Arndt, A. Zeilinger,  
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- 36) M. Arndt, O. Nairz, J. Voss-Andreae, C. Keller, G. van der Zouw, A. Zeilinger,  
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- 38) P. Szriftgiser, D. Guéry-Odelin, M. Arndt, J. Dalibard,  
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- 39) M. Arndt, S. I. Kanorsky, A. Weis, T. W. Hänsch,  
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- 40) Buchleitner, D. Delande, J. Zakrzewski, R. N. Mantegna, M. Arndt, H. Walther,  
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