

## List of Publications & Grants

# Rainer Kaltenbaek

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## Publication List

### Publication record overview

35 peer-reviewed publications, 5 conference proceedings, 2 book chapters and 3 extensive technical reports for ESA-funded projects, h-Index: 20, 2283 citations<sup>1</sup>.

### Peer-reviewed publications

[OA] marks open-access publications

#### My contribution to each publication is indicated as a percentage

- 1) A. Belenchia, M. Carlesso, Ö. Bayraktar et al, Phys. Rep. **951**, 1-70 (2022) [OA] 5%
- 2) G. Gasbarri, A. Belenchia, M. Carlesso et al., Commun. Phys. **4**, 155 (2021) [OA] 15%
- 3) R. Kaltenbaek, A. Acin, L. Bacsardi et al, Exp. Astron. (2021) [OA] 10%
- 4) K. Gosar et al, Phys. Rev. A **103**, 022611 (2021) 3%
- 5) A. Belenchia, G. Gasbarri, R. Kaltenbaek, H. Ulbricht, and M. Paternostro. Phys. Rev. A **100**, 033813 (2019) 10%
- 6) S. K. Joshi et al, New J. Phys. **20**, 063016 (2018) [OA] 3%
- 7) A. Pilan-Zanoni, J. Burkhardt, U. Johann, M. Aspelmeyer, R. Kaltenbaek, and G. Hechenblaikner. Appl. Therm. Engin. **107**, 689 (2016) [OA], 30%
- 8) R. Kaltenbaek et al. EPJ Quantum Tech. **3**, 5 (2016) [OA], 90%
- 9) G. Hechenblaikner, F. Hufgard, J. Burkhardt, N. Kiesel, U. Johann, M. Aspelmeyer, and R. Kaltenbaek. New J. Phys **16**, 013058 (2014) [OA], 30%
- 10) N. Kiesel, F. Blaser, U. Delic, D. Grass, R. Kaltenbaek and M. Aspelmeyer. Proc. Natl. Acad. Sci. USA **110**(35), 14180 (2013) [OA], 10%
- 11) M. D. Mazurek, K. M. Schreiter, R. Prevedel, R. Kaltenbaek, and K. J. Resch. Sci. Rep. **3**, 1582, doi: 10.1038/srep01582 (2013) [OA], 20%
- 12) R. Kaltenbaek, G. Hechenblaikner, N. Kiesel, O. Romero-Isart, K. C. Schwab, U. Johann, and M. Aspelmeyer. Exp. Astron. **34**, 123 (2012) [OA], 80%
- 13) K. Fisher, R. Prevedel, R. Kaltenbaek, and K. J. Resch. New J. Phys. **14**, 033016 (2012) [OA], 30%
- 14) M. Piani, D. Pitkanen, R. Kaltenbaek, and N. Lütkenhaus. Phys. Rev. A **84**, 032304 (2011), 20%

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<sup>1</sup> ISI web of knowledge, 04.02.2022; [orcid.org/0000-0002-9991-9919](https://orcid.org/0000-0002-9991-9919)

- 15) O. Romero-Isart, A. C. Pflanzner, F. Blaser, R. Kaltenbaek, N. Kiesel, M. Aspelmeyer, and J. I. Cirac. Phys. Rev. Lett. **107**, 020405 (2011), 10%
- 16) Tzu-Chieh Wei, J. Lavoie, and R. Kaltenbaek. Phys. Rev. A **83**, 033839 (2011), 20%
- 17) R. Prevedel, Y. Lu, W. Matthews, R. Kaltenbaek, and K. J. Resch. Phys. Rev. Lett. **106**, 110505 (2011), 20%
- 18) R. Kaltenbaek, J. Lavoie, B. Zeng, S. D. Bartlett, and K. J. Resch. Nature Phys. **6**, 850 (2010), 40%
- 19) J. Lavoie, R. Kaltenbaek, M. Piani, and K. J. Resch. Nature Phys. **6**, 827 (2010), 25%
- 20) Y. Lu, N. Coish, R. Kaltenbaek, D. R. Hamel, S. Croke, and K. J. Resch. Phys. Rev. A **82**, 042340 (2010), 15%
- 21) J. Lavoie, R. Kaltenbaek, M. Piani and K. J. Resch. Phys. Rev. Lett. **105**, 130501 (2010), 40%
- 22) N. Killoran, D. N. Biggerstaff, R. Kaltenbaek, K. J. Resch, and N. Lütkenhaus. Phys. Rev. A **81**, 012334 (2010), 15%
- 23) D. N. Biggerstaff, R. Kaltenbaek, D. R. Hamel, G. Weihs, T. Rudolph, and K. J. Resch. Phys. Rev. Lett. **103**, 240504 (2009), 20%
- 24) K. M. Schreiter, A. Pasieka, R. Kaltenbaek, K. J. Resch, and D.W. Kribs. Phys. Rev. A **80**, 022311 (2009), 20%
- 25) J. Lavoie, R. Kaltenbaek, and K. J. Resch. New J. Phys. **11**, 073051 (2009) [OA], 40%
- 26) R. Kaltenbaek, J. Lavoie, and K. J. Resch. Phys. Rev. Lett. **102**, 243601 (2009), 50%
- 27) R. Kaltenbaek, R. Prevedel, M. Aspelmeyer, and A. Zeilinger. Phys. Rev. A **79**, 040302 (2009), 80%
- 28) J. Lavoie, R. Kaltenbaek, and K. J. Resch. Opt. Exp. **17**, 3818 (2009) [OA], 40%
- 29) R. Kaltenbaek, J. Lavoie, D. N. Biggerstaff, and K. J. Resch. Nature Phys. **4**, 864 (2008), 60%
- 30) S. Gröblacher, T. Paterek, R. Kaltenbaek, C. Brukner, M. Zukowski, M. Aspelmeyer, and A. Zeilinger. Nature **446**, 252 (2007), 15%
- 31) S. Gröblacher, T. Paterek, R. Kaltenbaek, C. Brukner, M. Zukowski, M. Aspelmeyer, and A. Zeilinger. Nature **446**, 871 (2007), 15%
- 32) R. Prevedel, P. Walther, F. Tiefenbacher, P. Böhi, R. Kaltenbaek, T. Jennewein, and A. Zeilinger. Nature **445**, 65 (2007), 15%
- 33) R. Kaltenbaek, B. Blauensteiner, M. Zukowski, M. Aspelmeyer, and A. Zeilinger. Phys. Rev. Lett. **96**, 240502 (2006), 70%
- 34) R. Ursin, R. Jennewein, M. Aspelmeyer, R. Kaltenbaek, M. Lindenthal, P. Walther, and A. Zeilinger. Nature **430**, 849 (2004), 15%

- 35) M. Aspelmeyer, H. R. Böhm, T. Gyatso, T. Jennewein, R. Kaltenbaek, M. Lindenthal, G. Molina-Terriza, A. Poppe, K. J. Resch, M. Taraba, R. Ursin, P. Walther and A. Zeilinger. *Science* **301**, 621 (2003), 10%

### Pre-print articles

[OA] marks open-access public

- 1) R. Kaltenbaek, M. Arndt, M. Aspelmeyer et al, *MAQRO – BPS 2023 Research Campaign Whitepaper*, arXiv: 2202.01535 (2022)
- 2) R. Kaltenbaek, *Feasibility considerations for free-fall tests of gravitational decoherence*, arXiv: 2111.01483 (2021), accepted for publication in AVS Quantum Science

### Articles in Conference Proceedings

- 3) R. Kaltenbaek. *Testing quantum physics in space using high-mass matter-wave interferometry*. Proc. 50th Rencontres de Moriond, ed. E. Augé, J. Dumarchez, J. Trân Thanh Vân, pp. 141-144 arXiv: 1508.07796 (2015)
- 4) R. Kaltenbaek. *Testing quantum physics in space using optically trapped nanospheres*. *Proc. of SPIE* **8810**, 88100B (2013)
- 5) K. J. Resch, H. Hübel, D. R. Hamel, A. Fedrizzi, S. Ramelow, T. Jennewein, J. Lavoie, R. Kaltenbaek, and M. Piani. *Photon triplets and bound entanglement*. IEEE ICO-IP, Ottawa (2011)
- 6) K. J. Resch, R. Kaltenbaek, J. Lavoie and D. N. Biggerstaff. *Chirped-pulse interferometry with finite frequency correlations*. Proc. of SPIE **7465**, 7465N (2009)
- 7) R. Kaltenbaek, M. Aspelmeyer, T. Jennewein, C. Brukner, A. Zeilinger, M. Pfennigbauer and W. R. Leeb. *Proof-of-concept experiments for quantum physics in space*. Proc. of SPIE **5161**, 252\_(2003)

### Chapters in books

- 1) R. Kaltenbaek. *Tests in Space*. In “Do Wave Functions Jump? Perspectives of the Work of GianCarlo Ghirardi”, V. Allori, A. Bassi, D. Dürr, and N. Zanghi, editors, pages 401 – 411. Springer International Publishing (2021)
- 2) R. Kaltenbaek and M. Aspelmeyer. *Optomechanical Schrödinger cats – a case for space*. In “Erwin Schrödinger – 50 Years After“, W. L. Reiter and J. Yngvason, editors, pages 123 – 132. New York: Wiley (2013). arXiv:1502.02876

### Technical Reports

- 1) P. Schmid, U. Sezer, J. Horak, M. Aspelmeyer, M. Arndt, and R. Kaltenbaek. *Trapped nanoparticles in space experiments (NanoTrapS)*. Technical Report under Contract AO/1-6889/11/NL/CBi, ESA (2014).
- 2) R. Kaltenbaek, G. Hechenblaikner, N. Kiesel, F. Blaser, S. Gröblacher, S. Hofer, M. R. Vanner, W. Wiczorek, K. C. Schwab, U. Johann, and M. Aspelmeyer. *Macroscopic Quantum Experiments in Space (MQES)*. Technical Report under Contract Po P5401000400, ESA (2012).
- 3) M. Aspelmeyer, J. Jennewein, H. R. Böhm, Č. Brukner, R. Kaltenbaek, M. Lindenthal, G. Molina-Terriza, J. Petschinka, R. Ursin, P. Walther, A. Zeilinger, M. Pfennigbauer, and W. R. Leeb. *Quantum Communications in Space (QSpace)*. Technical Report under Contract 16358/02, ESA (2003).