

PUBLICATION LIST

Ass.-Prof. Mag. Borivoje Dakić

I have 41 publications, among them 36 are peer-reviewed (five in Nature journals and four in Physical Review Letters), with current H-index of 16 (Google Scholar) and around 2900 citations (Google Scholar). Here is the list of the top-cited papers:

1. (**1138** citations): B. Dakić, V. Vedral, and Č. Brukner, *Necessary and sufficient condition for non-zero quantum discord*, Phys. Rev. Lett. **105**, 190502 (2010),
2. (**565** citations): B. Dakić, Y. O. Lipp, X. Ma, M. Ringbauer, S. Kropatschek, S. Barz, T. Paterek, V. Vedral, A. Zeilinger, Č. Brukner and P. Walther, *Quantum Discord as Resource for Remote State Preparation*, Nature Physics **8**, 666-670 (2012),
3. (**428** citations): M. Tillmann, B. Dakić, R. Heilmann, S. Nolte, A. Szameit, and P. Walther, *Experimental Boson Sampling*, Nature Photonics **7**, 540-544 (2013),
4. (**199** citations): B. Dakić and Č. Brukner, *Quantum Theory and Beyond: Is Entanglement Special?*, In Deep Beauty: Understanding the Quantum World Through Mathematical Innovation, edited by H. Halvorson, Cambridge University Press, 2011,
5. (**164** citations): X. Ma, B. Dakić, W. Naylor, A. Zeilinger, and P. Walther, *Quantum Discord as Resource for Remote State Preparation*, Nature Physics **7**, 399-405 (2011).

Some of my publications have the media coverage, here is the list:

1. A. Ananthaswamy, *Quantum trick lets one particle send messages two ways at once*, New Scientist, February 2018,
2. R. Letzter, *Quantum Physicists Double the “Bandwidth” of the Universe*, Scientific American, March 2018,
3. *Fingerprints of quantum entanglement*, University of Vienna Press, January 2018,
4. *Do “Schrödinger cat-states” occur naturally*, Austrian Academy of Sciences Press, December 2017,
5. *Quantum mechanics is complex enough, for now...*, University of Vienna Press, April 2017,
6. T. C. Ralph, *Quantum computation: Boson sampling on a chip*, News and views: Nature Photonics **7**, 514-515, 2013,
7. M. Chalmers, *Why space has exactly three dimensions*, New Scientist, 2013,
8. A. Datta, *Quantum optics: Discord in the ranks*, News and views: Nature Photonics **6**, 724 (2012),
9. R. Webb, *Is quantum theory weird enough for the real world?*, New Scientist, 2010.

One of my papers: “*Efficient Hidden-Variable Simulation of Measurements in Quantum Experiments*” (Phys. Rev. Lett. **101**, 190402, 2008) has been selected by Editor (PRL Editors' Suggestion) and it has been selected for publication in Virtual Journal of Quantum Information (Volume **8**, Issue 11, 2008).

The complete list of publications is given below (preprints available on <https://arxiv.org/>).

List of publication

Articles in refereed journals:

1. F. Massa, A. Moqanaki, F. Del Santo, J. A. Kettlewell, B. Dakić, and P. Walther, *Experimental two-way communication with one photon*, Adv. Quantum Technol. **2**, 1900050 (2019), doi: 10.1002/qute.201900050,
2. V. Saggio, A. Dimić, C. Greganti, P. Walther, and B. Dakić, *Experimental few-copy multi-particle entanglement detection*, Nature Physics **15**, 935 (2019), doi: 10.1038/s41567-019-0550-4,
3. Z. Zhuo, S. Mondal, M. Markiewicz, A. Rutkowski, B. Dakić, W. Laskowski, and T. Paterek, *Paradoxical consequences of multipath coherence: perfect interaction-free measurements*, Phys. Rev. A **98**, 022108 (2018) (2018), doi: 10.1103/PhysRevA.98.022108.
4. A. Dimić and B. Dakić, *Single-copy entanglement detection*, npj Quantum Information **4**, 11 (2018), doi:10.1038/s41534-017-0055-x.
5. A. Dimić and B. Dakić, *On the central limit theorem for unsharp quantum random variables*, New J. Phys. **20**, 063051 (2018), doi: 10.1088/1367-2630/aacd68.
6. F. del Santo and B. Dakić, *Two-way communication with a single quantum particle*, Physical Review Letters **120**, 060503 (2018), doi: 10.1103/PhysRevLett.120.060503.
7. B. Dakić and M. Radonjić, *Macroscopic superpositions as quantum ground states*, Phys. Rev. Lett. **119**, 090401 (2017), doi: 10.1103/PhysRevLett.119.090401.
8. L. M. Procopio, L. A. Rozema, B. Dakić, and Philip Walther, *Comment on “Peres experiment using photons: No test for hypercomplex (quaternionic) quantum theories”*, Phys. Rev. A **96**, 036101 (2017), doi: 10.1103/PhysRevA.96.036101.
9. L. M. Procopio, L. A. Rozema, Z. J. Wong, D. R. Hamel, K. O'Brien, X. Zhang, B. Dakić, and Philip Walther, *Single-photon test of hyper-complex quantum theories using a metamaterial*, Nature Communications **8**, 15044 (2017), doi: 10.1038/ncomms15044.
10. M. C. Tran, B. Dakić, W. Laskowski, and T. Paterek, *Correlations between outcomes of random measurements*, Phys. Rev. A **94**, 042302 (2016), doi: 10.1103/PhysRevA.94.042302.
11. M. C. Tran, B. Dakić, F. Arnault, W. Laskowski, and T. Paterek, *Quantum entanglement from random measurements*, Phys. Rev. A **92**, 050301 (R) (2015), doi: 10.1103/PhysRevA.92.050301.
12. S. Barz, B. Dakić, Y. O. Lipp, F. Verstraete, J. D. Whitfield, and P. Walther, *Linear- Optical Generation of Eigenstates of the Two-Site XY Model*, Phys. Rev. X **5**, 021010 (2015), doi: 10.1103/PhysRevX.5.021010.
13. S. Barz, I. Kassal, M. Ringbauer, Y. O. Lipp, B. Dakić, A. A. Guzik, P. Walther, *A two-qubit photonic quantum processor and its application to solving systems of linear equations*, Scientific Reports **4**, 6115 (2014), doi: 10.1038/srep06115.
14. B. Dakić, T. Paterek, and Č. Brukner, *Density cubes and higher-order interference theories*, New J. Phys. **16**, 023028 (2014), doi: 10.1088/1367-2630/16/2/023028.
15. X. Ma, B. Dakić, S. Kropatschek, W. Naylor, Y. Chan, Z. Gong, L. Duan, A. Zeilinger, and P. Walther, *Towards photonic quantum simulation of ground states of frustrated Heisenberg spin systems*, Scientific Reports **4**, 3583 (2014), doi: 10.1038/srep03583.
16. B. Dakić, X. Ma, and P. Walther, *Photonic toolbox for quantum simulation*, Advances in Chemical Physics, Quantum Information and Computation for Chemistry **154**, 229-240 (2014), doi: 10.1002/9781118742631.ch09.
17. M. Tillmann, B. Dakić, R. Heilmann, S. Nolte, A. Szameit, and P. Walther, *Experimental Boson Sampling*, Nature Photonics **7**, 540-544 (2013) (media coverage), doi: 10.1038/nphoton.2013.102.
18. B. Dakić, Y. O. Lipp, X. Ma, M. Ringbauer, S. Kropatschek, S. Barz, T. Paterek, V. Vedral, A. Zeilinger, Č. Brukner and P. Walther, *Quantum Discord as Resource for Remote State Preparation*, Nature Physics **8**, 666-670 (2012) (media coverage), doi: 10.1038/nphys2377.

19. T. Paterek, B. Dakić, and Č. Brukner, *Reply to “Comment on ‘Mutually unbiased bases, orthogonal Latin squares, and hidden-variable models’ ”*, Phys. Rev. A **83**, 036102 (2011), doi: 10.1103/PhysRevA.83.036102.
20. X. Ma, B. Dakić, W. Naylor, A. Zeilinger, and P. Walther, *Quantum simulation of the wavefunction to probe frustrated Heisenberg spin systems*, Nature Physics **7**, 399-405 (2011), doi: 10.1038/nphys1919.
21. B. Dakić, V. Vedral, and Č. Brukner, *Necessary and sufficient condition for non-zero quantum discord*, Phys. Rev. Lett. **105**, 190502 (2010), doi: 10.1103/PhysRevLett.105.190502.
22. T. Paterek, B. Dakić, and Č. Brukner, *Theories of systems with limited information content*, New J. Phys. **12**, 053037 (2010), doi: 10.1088/1367-2630/12/5/053037.
23. B. Dakić, Milosević, and M. Damnjanović, *Generalized Bloch states and potentials of nanotubes and other quasi-1D systems II*, J. Phys. A: Math. Gen. **42**, 125202 (2009), doi: 10.1088/1751-8113/42/12/125202.
24. T. Paterek, B. Dakić, and Č. Brukner, *Mutually unbiased bases, orthogonal Latin squares, and hidden-variable models*, Phys. Rev. A **79**, 012109 (2009), doi: 10.1103/PhysRevA.79.012109.
25. B. Dakić, M. Suvakov, T. Paterek, and Č. Brukner, *Efficient Hidden-Variable Simulation of Measurements in Quantum Experiments*, Phys. Rev. Lett. **101**, 190402 (2008) (Editors’ suggestion), doi: 10.1103/PhysRevLett.101.190402.
26. B. Dakić, Milosević, and M. Damnjanović, *Generalized Bloch states and potentials of nanotubes and other quasi-1D systems*, J. Phys. A: Math. Gen. **42** 11833-11846 (2006), doi: 10.1088/1751-8113/42/12/125202.
27. E. Dobardžić, I. Milosević, B. Dakić, and M. Damnjanović, *Raman and infrared-active modes in MS2 nanotubes (M=Mo,W)*, Phys. Rev. B **74**, 033403 (2006), doi: 10.1103/PhysRevB.74.033403.
28. E. Dobardžić, B. Dakić, M. Damnjanović, and I. Milosević, *Zero m phonons in MoS2 nanotubes*, Phys. Rev. B **71**, 121405(R) (2005), doi: 10.1103/PhysRevB.71.121405.

Book contributions:

29. B. Dakić, and Č. Brukner, *The classical limit of a physical theory and the dimensionality of space*, In Quantum Theory: Informational Foundations and Foils, Eds. G. Chiribella, and R. Spekkens, Springer, 2016 (media coverage), ISBN: 9401773033.
30. B. Dakić and Č. Brukner, *Quantum Theory and Beyond: Is Entanglement Special?*, In Deep Beauty: Understanding the Quantum World Through Mathematical Innovation, edited by H. Halvorson, Cambridge University Press, 2011 (media coverage), ISBN: 9781107005709.

Arxiv E-prints:

31. S. Horvat and B. Dakić, *Interference as an information-theoretic game*, arXiv:2003.12114 (2020), <https://arxiv.org/abs/2003.12114>,
32. L. A. Rozema, Z. Zhuo, T. Paterek and B. Dakić, *Higher-order interference in quantum physics*, arXiv:2003.11048 (2020), <https://arxiv.org/abs/2003.11048>,
33. D. Gočanin, A. Dimić, F. Del Santo and B. Dakić, *Bell's theorem for trajectories*, arXiv:2001.00681 (2020), <https://arxiv.org/abs/2001.00681>,
34. S. Horvat and B. Dakić, *Quantum enhancement to information speed*, arXiv:1911.11803 (2019), <https://arxiv.org/abs/1911.11803>,
35. F. Del Santo and B. Dakić, *Bell's Equality and Communication in Quantum Superposition*, arXiv:1910.04784 (2019), <https://arxiv.org/abs/1910.04784>,
36. J. Morris and B. Dakić, *Selective Quantum State Tomography*, arXiv:1909.05880 (2019), <https://arxiv.org/abs/1909.05880>.

Conference proceedings:

37. L. A. Rozema, V. Saggio, A. Dimić, C. Greganti, P. Walther, and B. Dakić, *Verifying Multi-Partite Entanglement with a Few Detection Events*, in Conference on Lasers and Electro-Optics 2019, OSA Technical Digest (Optical Society of America, 2019), paper FM2M.7, doi: 10.1364/CLEO_QELS.2019.FM2M.7,
38. V. Saggio, A. Dimić, C. Greganti, L. A. Rozema, P. Walther, and B. Dakić, *Verifying Multi-Particle Entanglement with a Few Detection Events*, in Quantum Information and Measurement (QIM) V: Quantum Technologies, OSA Technical Digest (Optical Society of America, 2019), paper F5A.7, doi: 10.1364/QIM.2019.F5A.7,
39. S. Barz, X. S. Ma, B. Dakić, A. Zeilinger, and P. Walther, *Experimental photonic state engineering and quantum control of two optical qubits*, AIP Conf. Proc. **1363**, 13-16 (2011), doi: 10.1063/1.3630138.
40. E. Dobardzić, I. Milosević, B. Dakić, and M. Damnjanović, *Phonons in MS₂ (M = Mo;W) nanotubes*, AIP Conf. Proc. **899**, 383-384 (2007), ISSN: 0094-243X.
41. I. Milosević, E. Dobardzić, B. Dakić, and M. Damnjanović, *Zero m phonons in metal chalcogenide nanotubes*, J. Phys.: Conf. Ser. **92**, 012141 (2007), doi: 10.1088/1742-6596/92/1/012141.