

## Publication full list

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1. "Reinforcement learning for optimization of variational quantum circuit architectures"  
Mateusz Ostaszewski, Lea M Trenkwalder, Wojciech Masarczyk, Eleanor Scerri, Vedran Dunjko,  
Advances in Neural Information Processing Systems (NeurIPS) (2021)
2. "Variational quantum policies for reinforcement learning", Sofiene Jerbi, Casper Gyurik, Simon  
Marshall, Hans J Briegel, Vedran Dunjko, Advances in Neural Information Processing Systems (NeurIPS)  
(2021)
3. "Encoding strongly-correlated many-boson wavefunctions on a photonic quantum computer:  
application to the attractive Bose-Hubbard model", Saad Yalouz, Bruno Senjean, Filippo Miatto, Vedran  
Dunjko, *Quantum* 5, 572 (2021)
4. "On solving classes of positive-definite quantum linear systems with quadratically improved runtime in  
the condition number", Davide Orsucci, Vedran Dunjko, *Quantum* 5, 573 (2021)
5. "Quantum-accessible reinforcement learning beyond strictly epochal environments", Arne Hamann,  
Vedran Dunjko, Sabine Wölk, *Quantum Machine Intelligence* 3 (2), 1-18 (2021)
6. "Inside quantum black boxes," Vedran Dunjko. *Nature Physics* (2021). <https://doi.org/10.1038/s41567-021-01246-8>
7. "Smooth input preparation for quantum and quantum-inspired machine learning", Zhikuan Zhao, Jack  
Fitzsimons, Patrick Rebentrost, Vedran Dunjko, Joseph Fitzsimons, *Quant. Mach. Int.* 3 (1), 1-6 (2021)
8. "Tabu-driven Quantum Neighborhood Samplers", Charles Moussa, Hao Wang, Henri Calandra, Thomas  
Back, Vedran Dunjko, accepted *EvoStar 2021* (2021)
9. "Experimental quantum speed-up in reinforcement learning agents", Valeria Saggio, Beate E Asenbeck,  
Arne Hamann, Teodor Stromberg, Peter Schiansky, Vedran Dunjko, Nicolai Friis, Nicholas C Harris,  
Michael Hochberg, Dirk Englund, Sabine Wolk, Hans J Briegel, Philip Walther, *Nature* 591 (7849), 229-  
233 (2021)
10. "Quantum enhancements for deep reinforcement learning in large spaces", Sofiene Jerbi, Lea M  
Trenkwalder, Hendrik Poulsen Nautrup, Hans J Briegel, Vedran Dunjko, *PRX Quantum* 2 (1), 010328  
(2021)
11. "To quantum or not to quantum: towards algorithm selection in near-term quantum optimization",  
Charles Moussa, Henri Calandra, Vedran Dunjko, *Quant. Sci. Tech.* 5 (4), 044009 (2020)
12. "On the convergence of projective-simulation-based reinforcement learning in Markov decision  
processes", Jens Clausen, Walter L. Boyajian, Lea M. Trenkwalder, Vedran Dunjko, Hans J. Briegel  
*Quant. Mach. Int.* 13 (2020)

13. "A non-review of Quantum Machine Learning: trends and explorations", Vedran Dunjko, Peter Wittek, *Quantum Views* 4, 32 (2020)
14. "A hybrid algorithm framework for small quantum computers with application to finding Hamiltonian cycles", Yimin Ge, Vedran Dunjko, *J. Math.Phys.* 61 (1), 012201 (2020)
15. "Skill Learning by Autonomous Robotic Playing Using Active Learning and Exploratory Behavior Composition", Simon Hangl, Vedran Dunjko, Hans J. Briegel, Justus Piater *Front. Robot. AI*, 03 April (2020)
16. "Optimizing quantum error correction codes with reinforcement learning", Hendrik Poulsen Nautrup, Nicolas Delfosse, Vedran Dunjko, Hans J Briegel, Nicolai Friis, *Quantum* 3, 215 (2019)
17. "Simple proof of confidentiality for private quantum channels in noisy environments", Alexander Pirker, Michael Zwerger, Vedran Dunjko, Hans J. Briegel, Wolfgang Dür, *Quant, Sci. Techn.*, 4, 2 (2019)
18. "Speeding-up the decision making of a learning agent using an ion trap quantum processor", Theeraphot Sriarunothai, Sabine Wolk, Gouri Shankar Giri, Nicolai Friis, Vedran Dunjko, Hans J. Briegel, Christof Wunderlich, *Quant. Sci. Techn.* 4, 015014 (2019)
19. "Computational speedups using small quantum devices". Vedran Dunjko, Yimin Ge and J. Ignacio Cirac, *Phys. Rev. Lett.* 121, 250501 (Editor's suggestion, Featured in Physics) (2018)
20. "Neural Network Operations and Susuki-Trotter evolution of Neural Network States", Nahuel Freitas, Giovanna Morigi, Vedran Dunjko, *Int. J. Quantum Inf.* 16, 1840008 (2018)
21. "Optimal sequential quantum mixing for slowly evolving sequences of Markov chains", Davide Orsucci, Hans J. Briegel and Vedran Dunjko, *Quantum* 2, 105 (2018)
22. "Machine learning & artificial intelligence in the quantum domain: a review of recent progress", Vedran Dunjko and Hans J. Briegel *Rep., Prog. Phys* 81, 074001 (2018)
23. "Active learning machine learns to create new quantum experiments", Alexey A. Melnikov, Hendrik Poulsen Nautrup, Mario Krenn, Vedran Dunjko, Markus Tiersch, Anton Zeilinger, Hans J. Briegel, *Proc. Natl. Acad. Sci.* 115 (6) pp. 1221-1226 (PNAS Cozzarelli Prize) (2018)
24. "Long-range big quantum-data transmission", Michael Zwerger, Alexander Pirker, Vedran Dunjko, Wolfgang Dur, Hans J. Briegel, *Phys. Rev. Lett.* 120, 030503 (2018)
25. "Advances in quantum reinforcement learning", Vedran Dunjko, Jacob M. Taylor, Hans J. Briegel, *IEEE SMC*, Banff, AB, 2017, pp. 282-287. doi: 10.1109/SMC.2017.8122616 (2017).
26. "Projective simulation with generalization", Alexey A. Melnikov, Adi Makmal, Vedran Dunjko, Hans J. Briegel, *Sci. Rep.* 7, 14430 (2017)

27. "Entanglement generation secure against general attacks", Alexander Pirker, Vedran Dunjko, Wolfgang Dür, Hans J. Briegel, *New J. Phys.* 19, 113012 (2017)
28. "Flexible resources for quantum metrology", Nicolai Friis, Davide Orsucci, Michalis Skotiniotis, Pavel Sekatski, Vedran Dunjko, Hans J. Briegel, Wolfgang Dür, *New J. Phys.*, 19, 063044 (2017)
29. "Quantum-enhanced machine learning", Vedran Dunjko, Jacob M. Taylor, Hans J. Briegel. *Phys. Rev. Lett.* 117, 130501 (2016)
30. "Meta-learning within Projective Simulation", Adi Makmal, Alexey A. Melnikov, Vedran Dunjko, Hans J. Briegel, *IEEE Access* 4, 2110 (2016)
31. "Enhanced delegated computing using coherence", Stefanie Barz, Vedran Dunjko, Florian Schlederer, Merritt Moore, Elham Kashefi, Ian A. Walmsley, *Phys. Rev. A* 93, 032339 (2016)
32. "Quantum-enhanced Secure Delegated Classical Computing", Vedran Dunjko, Theodoros Kapourniotis, Elham Kashefi, *Quant. Inf. Comput.* 16, pp 61-86 (2016)
33. "Experimental demonstration of kilometer-range quantum digital signatures", Ross J. Donaldson, Robert J. Collins, Klaudia Kleczkowska, Ryan Amiri, Petros Wallden, Vedran Dunjko, John Jeffers, Erika Andersson, Gerald S. Buller, *Phys. Rev. A* 93, 012329, (Editors' suggestion) (2016)
34. "Quantum mixing of Markov chains for special distributions", Vedran Dunjko, Hans J. Briegel, *New J. Phys.* 17, 073004 (2015)
35. "Quantum digital signatures with quantum-key-distribution components", Petros Wallden, Vedran Dunjko, Adrian Kent, Erika Andersson, *Phys. Rev. A* 91, 042304 (2015)
36. "Quantum-enhanced deliberation of learning agents in trapped ions", Vedran Dunjko, Nicolai Friis, Hans J. Briegel, *New J. Phys.* 17, 023006 (2015)
37. "Ground state blind quantum computation on AKLT state", Tomoyuki Morimae, Vedran Dunjko, Elham Kashefi, *Quantum Inf. Comput.* 15, 3&4, pp 200-234 (2015)
38. "Entanglement of pi-locally-maximally-entangleable states and the satisfiability problem", Adi Makmal, Markus Tiersch, Vedran Dunjko, Shengjun Wu, *Phys. Rev. A* 90, 042308 (2014)
39. "Quantum speed-up for active learning agents", Giuseppe Davide Paparo, Vedran Dunjko, Adi Makmal, Miguel Angel Martin-Delgado, Hans J. Briegel, *Phys. Rev. X* 4, 031002 (2014)
40. "Implementing quantum control for unknown subroutines", Nicolai Friis, Vedran Dunjko, Wolfgang Dür, Hans J. Briegel *Phys. Rev. A* 89, 030303(R) (2014)
41. "Optical realisation of Quantum Digital Signatures without quantum memory". Robert J. Collins, Ross J. Donaldson, Vedran Dunjko, Petros Wallden, Patrick J. Clarke, Erika Andersson, John Jeffers, Gerald S. Buller, *Phys. Rev. Lett.* 113, 040502, (Editors' Suggestion; Featured in Physics) (2014)

42. "Minimum-cost quantum measurements for quantum information", Petros Wallden, Vedran Dunjko, Erika Andersson, *J. Phys. A* 47 125303 (2014)
43. "Quantum Digital Signatures without Quantum Memory", Vedran Dunjko, Petros Wallden, Erika Andersson, *Phys. Rev. Lett.* 112 040502 (2014)
44. "Composable security of delegated quantum computation", Vedran Dunjko, Joseph F. Fitzsimons, Christopher Portmann, Renato Renner, *Lecture Notes in Computer Science* 8874 pp 406-425 (Asiacrypt 2014) (2014)
45. "Philostratigraphic profiles reveal a deep evolutionary history of the vertebrate head sensory systems", Martin Sebastijan Šestak, Vedran Božičević, Robert Bakarić, Vedran Dunjko, Tomislav Domazet-Lošo, *Front. Zool.* 10:18 (2013)
46. "Extended phase map decompositions for unitaries", Vedran Dunjko, Elham Kashefi, *Math. Struct. Comput. Sci.*, 23, pp 360-385, (2013)
47. "Experimental demonstration of quantum digital signatures", Patrick J. Clarke, Robert J. Collins, Vedran Dunjko, Erika Andersson, John Jeffers, Gerald S. Buller, *Nat. Commun.* 3:1174 (2012)
48. "Truly noiseless probabilistic amplification", Vedran Dunjko, Erika Andersson, *Phys. Rev. A* 86 042322 (2012)
49. "Transformations between symmetric sets of quantum states", Vedran Dunjko, Erika Andersson, *J. Phys. A* 45 365304 (2012)
50. "Universal blind quantum computing with weak coherent pulses", Vedran Dunjko, Elham Kashefi, Anthony Leverrier, *Phys. Rev. Lett.* 108 200502 (2012)
51. "Novel modifications of parallel Jacobi algorithms", Sanja Singer, Saša Singer, Vedran Novaković, Aleksandar Ušćumlić, Vedran Dunjko, *Numer. Algorithms* 59 1-27 (2012)
52. Algebraic characterisation of one-way patterns Vedran Dunjko, Elham Kashefi, *In Proc. 6th Workshop on Developments in Computational Models: Causality, Computation, and Physics* 26 EPTCS, pp 85-100 (2010)

## Submitted and preprints

53. "Quantum machine learning beyond kernel methods", Sofiene Jerbi, Lucas J Fiderer, Hendrik Poulsen Nautrup, Jonas M Kübler, Hans J Briegel, Vedran Dunjko, arXiv:2110.13162 (2021)
54. "LIMDD: A Decision Diagram for Simulation of Quantum Computing Including Stabilizer States", Lieuwe Vinkhuijzen, Tim Coopmans, David Elkouss, Vedran Dunjko, Alfons Laarman, arXiv:2108.00931 (2021)

55. "Performance comparison of optimization methods on variational quantum algorithms", Xavier Bonet-Monroig, Hao Wang, Diederick Vermetten, Bruno Senjean, Charles Moussa, Thomas Bäck, Vedran Dunjko, Thomas E O'Brien, arXiv:2111.13454 (2021)
56. "Quantum agents in the Gym: a variational quantum algorithm for deep Q-learning", Andrea Skolik, Sofiene Jerbi, Vedran Dunjko, arXiv:2103.15084 (2021)
57. "Structural risk minimization for quantum linear classifiers", Casper Gyurik, Dyon van Vreumingen, Vedran Dunjko, arXiv:2105.05566 (2021)
58. "Certificates of quantum many-body properties assisted by machine learning", Borja Requena, Gorka Muñoz-Gil, Maciej Lewenstein, Vedran Dunjko, Jordi Tura, arXiv:2103.03830 (2021)
59. "Hybrid divide-and-conquer approach for tree search algorithms", Mathys Rennela, Alfons Laarman, Vedran Dunjko, arXiv:2007.07040 (2020)
60. "Towards quantum advantage for topological data analysis", Casper Gyurik, Chris Cade, Vedran Dunjko, arXiv:2005.02607 (2020)
61. "Blind quantum computing with two almost identical states", Vedran Dunjko, Elham Kashefi, arXiv:1604.01586 (2016)
62. "Framework for learning agents in quantum environments", Vedran Dunjko, Jacob M. Taylor, Hans J. Briegel, arXiv:1507.08482 (2015)
63. "On optimising quantum communication in verifiable quantum computing", Theodoros Kapourniotis, Vedran Dunjko, Elham Kashefi, arXiv:1506.06943 [presented at AQIS 2015] (2015)