Bibliography

- Aharonov, Y. & J. Anandan, Phys. Rev. Lett. 58 (16), 1593 (1987). "Phase Change During a Cyclic Quantum Evolution". DOI: 10.1103/PhysRevLett.58.1593
- Anandan, J., Physics Letters A **133** (4-5), 171 (1988). "Non-adiabatic non-abelian geometric phase". DOI: 10.1016/0375-9601(88)91010-9
- Aspect, A., P. Grangier, & G. Roger, Phys. Rev. Lett. **47** (7), 460 (1981). "Experimental Tests of Realistic Local Theories via Bell's Theorem".
- Barenco, A., C. H. Bennett, R. Cleve, et al., Physical Review A 52 (5), 3457 (1995). "Elementary gates for quantum computation". DOI: 10.1103/physreva.52.3457 arXiv:quant-ph/9503016
- Bell, J. S., Rev. Mod. Phys. **38** (3), 447 (1966). "On the Problem of Hidden Variables in Quantum Mechanics".
- Bennett, C. H. & S. J. Wiesner, Phys. Rev. Lett. **69 (20)**, 2881 (1992). "Communication via one- and two-particle operators on Einstein-Podolsky-Rosen states".
- Bergou, J. A., U. Herzog, & M. Hillery, "Discrimination of Quantum States," in Paris & Rehacek (2004), Chap. 11, pp. 417–465. DOI: 10.1007/978-3-540-44481-7_11
- Berry, M. V., Proc. R. Soc. London A **392**, 45 (1984). "Quantal Phase Factors Accompanying Adiabatic Changes".
- Blum, K., Density Matrix Theory and Applications, Vol. 64 of Springer Series on Atomic, Optical, and Plasma Physics (Springer Berlin Heidelberg, 2012), 3rd ed., ISBN 978-3-642-20560-6.
- Born, M., Z. Phys. 37 (12), 863 (1926). "Zur Quantenmechanik der Stoßvorgänge".
- Breuer, H.-P. & F. Petruccione, *The Theory of Open Quantum Systems* (Oxford University Press, New York, 2002).
- Caves, C. M., Phys. Rev. D 23 (8), 1693 (1981). "Quantum-mechanical noise in an interferometer".

168 BIBLIOGRAPHY

Chefles, A., "Quantum States: Discrimination and Classical Information Transmission. A Review of Experimental Progress," in Paris & Rehacek (2004), Chap. 12, pp. 467–511. DOI: 10.1007/978-3-540-44481-7_12

- Chiaverini, J., Science **308** (**5724**), 997 (2005). "Implementation of the Semiclassical Quantum Fourier Transform in a Scalable System". DOI: 10.1126/science. 1110335
- Deutsch, D. & R. Jozsa, Proceedings of the Royal Society A: Mathematical, Physical and Engineering Sciences **439** (1907), 553 (1992). "Rapid Solution of Problems by Quantum Computation". DOI: 10.1098/rspa.1992.0167
- DiVincenzo, D. P., Fortschr. Phys. **48**, 771 (2000). "The Physical Implementation of Quantum Computation". DOI: 10.1002/1521-3978(200009)48:9/11<771:: AID-PROP771>3.0.CO; 2-E arXiv:quant-ph/0002077
- Dum, R., A. S. Parkins, P. Zoller, & C. W. Gardiner, Phys. Rev. A **46** (7), 4382 (1992). "Monte Carlo simulation of master equations in quantum optics for vacuum, thermal, and squeezed reservoirs".
- Einstein, A., B. Podolsky, & N. Rosen, Phys. Rev. 47, 777 (1935). "Can Quantum-Mechanical Description of Physical Reality Be Considered Complete?"
- Giovannetti, V., S. Lloyd, & L. Maccone, Physical Review Letters **96** (1), 010401 (2006). "Quantum Metrology". DOI: 10.1103/PhysRevLett.96.010401 arXiv:quant-ph/0509179
- Griffiths, R. B. & C.-S. Niu, Physical Review Letters **76** (**17**), 3228 (1996). "Semiclassical Fourier Transform for Quantum Computation". DOI: 10.1103/physrevlett.76.3228 arXiv:quant-ph/9511007
- Hardy, L., Phys. Rev. Lett. **68 (20)**, 2981 (1992). "Quantum Mechanics, Local Realistic Theories, and Lorentz-Invariant Realistic Theories".
- Higgins, B. L., D. W. Berry, S. D. Bartlett, H. M. Wiseman, & G. J. Pryde, Nature 450 (7168), 393 (2007). "Entanglement-free Heisenberg-limited phase estimation". DOI: 10.1038/nature06257 arXiv:0709.2996
- Horodecki, M., P. Horodecki, & R. Horodecki, Phys. Lett. A **223** (1), 1 (1996). "Separability of mixed states: necessary and sufficient conditions". DOI: 10.1016/0375-9601(95)00930-2
- Jiang, M., S. Luo, & S. Fu, Physical Review A **87** (2) (2013). "Channel-state duality". DOI: 10.1103/physreva.87.022310
- Kitaev, A. Y., Electronic Colloquium on Computational Complexity 3, 3 (1996). "Quantum measurements and the Abelian Stabilizer Problem". arXiv:quant-ph/9511026

BIBLIOGRAPHY 169

Kitaev, A. Y., Russian Mathematical Surveys **52 (6)**, 1191 (1997). "Quantum computations: algorithms and error correction".

- Lang, S., Introduction to Linear Algebra, Undergraduate Texts in Mathematics (Springer New York, New York, 1986), 2nd ed., ISBN 9781461210702. DOI: 10.1007/978-1-4612-1070-2
- Lang, S., *Linear Algebra* (Springer, Berlin, 1987), 3rd ed., ISBN 978-1-4757-1949-9. DOI: 10.1007/978-1-4757-1949-9
- Lundeen, J. S., B. Sutherland, A. Patel, C. Stewart, & C. Bamber, Nature 474 (7350), 188 (2011). "Direct measurement of the quantum wavefunction". DOI: 10.1038/nature10120
- Nakazato, H., Y. Hida, K. Yuasa, B. Militello, A. Napoli, & A. Messina, Physical Review A **74** (6), 062113 (2006). "Solution of the Lindblad equation in the Kraus representation". DOI: 10.1103/physreva.74.062113 arXiv:quant-ph/0606193
- Nielsen, M. & I. L. Chuang, Quantum computation and quantum information (Cambridge University Press, New York, 2011), 10th anniversary ed., ISBN 978-1107002173.
- Paris, M. & J. Rehacek, eds., Quantum State Estimation, Vol. 649 of Lecture Notes in Physics (Springer Berlin Heidelberg, Berlin, 2004), ISBN 9783540444817. DOI: 10.1007/b98673
- Peres, A., Phys. Rev. Lett. **77** (8), 1413 (1996). "Separability Criterion for Density Matrices". DOI: 10.1103/PhysRevLett.77.1413 arXiv:quant-ph/9604005
- Plenio, M. B. & P. L. Knight, Rev. Mod. Phys. **70** (1), 101 (1998). "The quantum-jump approach to dissipative dynamics in quantum optics".
- Raussendorf, R. & H. J. Briegel, Phys. Rev. Lett. **86** (22), 5188 (2001). "A One-Way Quantum Computer".
- Raussendorf, R., D. Browne, & H. Briegel, Journal of Modern Optics **49** (**8**), 1299 (2002). "The one-way quantum computer—a non-network model of quantum computation". DOI: 10.1080/09500340110107487 arXiv:quant-ph/0108118
- Sjöqvist, E., D. M. Tong, L. Mauritz Andersson, B. Hessmo, M. Johansson, & K. Singh, New Journal of Physics 14 (10), 103035 (2012). "Non-adiabatic holonomic quantum computation". DOI: 10.1088/1367-2630/14/10/103035 arXiv:1107.5127
- Størmer, E., *Positive Linear Maps of Operator Algebras* (Springer, Berlin, 2013), ISBN 9783642343698. DOI: 10.1007/978-3-642-34369-8

170 BIBLIOGRAPHY

Vallone, G. & D. Dequal, Physical Review Letters 116 (4), 040502 (2016). "Strong Measurements Give a Better Direct Measurement of the Quantum Wave Function". DOI: 10.1103/physrevlett.116.040502 arXiv:1504.06551

- Wilczek, F. & A. Zee, Phys. Rev. Lett. **52** (**24**), 2111 (1984). "Appearance of Gauge Structure in Simple Dynamical Systems". DOI: 10.1103/PhysRevLett.52.2111
- Zanardi, P. & M. Rasetti, Phys. Lett. A **264** (2-3), 94 (1999). "Holonomic quantum computation". DOI: 10.1016/S0375-9601(99)00803-8 arXiv:quant-ph/9904011
- Zurek, W. H., Phys. Today 44 (10), 36 (1991). "Decoherence and the transition from quantum to classical".
- Zurek, W. H., Los Alamos Science **27**, 2 (2002). "Decoherence and the Transition from Quantum to Classical: Revisited".

Index

bitwise AND, 67	Markov approximation, 120
Bloch sphere, 16, 17	maximally entangled, 72
Bloch vector, 16	measurement, 35, 77
cluster state, 72 CNOT, 46	measurement-based quantum computa- tion, 84 mixed state, 13
controlled-NOT gate, 46 multi-qubit controlled-NOT, 68 control qubit, 46 controlled- U gate, 46	non-Hermitian Hamiltonian, 121 normal operator, 143
multi-qubit controlled- U gate, 56, 65 cyclic evolution, 83 CZ, 50	one-way quantum computation, see also measurement-based quantum computation
controlled-Z gate, 50 damping operator, 121, 125 density matrix, 13	Pauli operators, 36, 72 Pauli gates, 36 phase gate, 71 positive operator, 143
density operator, 13 DiVincenzo criteria, 76	quantum entanglement, 13
elementary qunatum logic gates, 36 entangled state, 11, 13, 47 Euler rotation, 45 Euler angles, 45	quantum circuit model quantum circuit diagram, 35 quantum computer architecture, 75 quantum efficiency, 77
graph state, see also cluster state Gray code, 56, 66 Gray code sequence, 66	quantum entanglement, 48 quantum entangler circuit, 48 quantum jump approach, 121, 125
Hadamard gate, 40, 72 Hadamard matrix, 40	quantum jump operator, 121 quantum logic gate, 46 quantum logic gate operation, 35
initialization, 77	quantum master equation, 125 quantum oracle, 94
Lindblad equation, 125	quantum teleportation, 13, 48
Lindblad operator, 121	qubit, 35, 76
logical basis, 9	quantum bit, 35

172 INDEX

```
reduced density matrix, 72
rotation, 44
Schmidt decomposition, 11
Schmidt rank, 20
separable state, 11
spectral decomposition, 143
statistical ensemble, 13
target qubit, 46
tensor-product basis, 11
tensor-product space, 11
two-level unitary transformation, 58, 61
    two-level unitary matrix, 64, 65
unitary group, 36
unitary matrix, 36
universal quantum computation, 36, 58,
    universal set of quantum gate oper-
        ations, 77
vector space of linear operators, 17
```