

# References

- Acin, A., Gisin, N., and Scarani, V., (2004), "Coherent-pulse implementations of quantum cryptography protocols resistant to photon-number-splitting attacks", *Physical Review A*, Vol.69, No.1, pp.012309, 2004
- Adhikari, S., Home, D., Majumdar, A. S., Pan, A. K., Shenoy, A., and Srikanth, R., (2015), "Toward secure communication using intra-particle entanglement", *Quantum Information Processing*, Vol.14, No.4, pp.1451–1468, 2015
- Alda, J., (2003), "Laser and Gaussian beam propagation and transformation", *Encyclopedia of optical engineering*, Vol.2013,, pp.999–1013, 2003
- Alléaume, R., Treussart, F., Messin, G., Dumeige, Y., Roch, J.-F., Beveratos, A., Brouri-Tualle, R., Poizat, J.-P., and Grangier, P., (2004), "Experimental open-air quantum key distribution with a single-photon source", *New Journal of physics*, Vol.6, No.1, pp.92, 2004
- Amiri, R. and Arrazola, J. M., (2017), "Quantum money with nearly optimal error tolerance", *Physical Review A*, Vol.95, No.6, pp.062334, 2017
- An, N. B., (2005), "Secure dialogue without a prior key distribution", *Journal-Korean Physical Society*, Vol.47, No.4, pp.562, 2005
- An, N. B., (2010), "Joint remote state preparation via W and W-type states", *Optics Communications*, Vol.283, No.20, pp.4113–4117, 2010
- An, N. B., Bich, C. T., and Van Don, N., (2011), "Deterministic joint remote state preparation", *Physics Letters A*, Vol.375, No.41, pp.3570–3573, 2011
- Anderson, G., (1995), "FASCODE/MODTRAN/LOWTRAN: Paste/Present/Future", In *18th Annual Review Conference on Atmospheric Models*
- Arnon, S., (2003), "Effects of atmospheric turbulence and building sway on optical wireless-communication systems", *Optics letters*, Vol.28, No.2, pp.129–131, 2003
- Aspect, A., Dalibard, J., and Roger, G., (1982), "Experimental test of Bell's inequalities using time-varying analyzers", *Physical review letters*, Vol.49, No.25, pp.1804, 1982
- Aspelmeyer, M., Jennewein, T., Pfennigbauer, M., Leeb, W. R., and Zeilinger, A., (2003), "Long-distance quantum communication with entangled photons using satellites", *IEEE Journal of Selected Topics in Quantum Electronics*, Vol.9, No.6, pp.1541–1551, 2003
- Avella, A., Brida, G., Degiovanni, I. P., Genovese, M., Gramegna, M., and Traina, P., (2010), "Experimental quantum-cryptography scheme based on orthogonal states", *Physical Review A*, Vol.82, No.6, pp.062309, 2010
- Aviv, D. G., (2006), *Laser Space Communications*, Artech House Publishers, 2006
- Azuma, K., Tamaki, K., and Lo, H.-K., (2015), "All-photonic quantum repeaters", *Nature communications*, Vol.6,, 2015
- Bacco, D. et al., (2015), "Quantum communications between Earth and Space", 2015
- Banerjee, A. and Pathak, A., (2012), "Maximally efficient protocols for direct secure quantum communication", *Physics Letters A*, Vol.376, No.45, pp.2944–2950, 2012
- Banerjee, S. and Ghosh, R., (2007a), "Dynamics of decoherence without dissipation in a squeezed thermal bath", *Journal of Physics A: Mathematical and Theoretical*, Vol.40, No.45, pp.13735, 2007

- Banerjee, S. and Ghosh, R., (2007b), "Dynamics of decoherence without dissipation in a squeezed thermal bath", *Journal of Physics A: Mathematical and Theoretical*, Vol.40, No.45, pp.13735, 2007
- Banerjee, S. and Srikanth, R., (2008a), "Geometric phase of a qubit interacting with a squeezed-thermal bath", *The European Physical Journal D-Atomic, Molecular, Optical and Plasma Physics*, Vol.46, No.2, pp.335–344, 2008
- Banerjee, S. and Srikanth, R., (2008b), "Geometric phase of a qubit interacting with a squeezed-thermal bath", *The European Physical Journal D-Atomic, Molecular, Optical and Plasma Physics*, Vol.46, No.2, pp.335–344, 2008
- Banerjee, S., Srikanth, R., Chandrashekhar, C. M., and Rungta, P., (2008), "Symmetry-noise interplay in a quantum walk on an  $n$ -cycle", *Phys. Rev. A*, Vol.78, pp.052316, Nov 2008
- Bedington, R., Arrazola, J. M., and Ling, A., (2017), "Progress in satellite quantum key distribution", *npj Quantum Information*, Vol.3, No.1, pp.30, 2017
- Bennett, C. H., (1992), "Quantum cryptography using any two nonorthogonal states", *Physical review letters*, Vol.68, No.21, pp.3121, 1992
- Bennett, C. H., Bessette, F., Brassard, G., Salvail, L., and Smolin, J., (1992), "Experimental quantum cryptography", *Journal of cryptology*, Vol.5, No.1, pp.3–28, 1992
- Bennett, C. H. and Brassard, G., (1984), "QUANTUM CRYPTOGRAPHY: PUBLIC KEY DISTRIBUTION AND CON Tos5", 1984
- Bennett, C. H. and Brassard, G., (2014), "Quantum cryptography: Public key distribution and coin tossing.", *Theor. Comput. Sci.*, Vol.560, No.P1, pp.7–11, 2014
- Bennett, C. H., Brassard, G., Crépeau, C., Jozsa, R., Peres, A., and Wootters, W. K., (1993a), "Teleporting an unknown quantum state via dual classical and Einstein-Podolsky-Rosen channels", *Physical review letters*, Vol.70, No.13, pp.1895, 1993
- Bennett, C. H., Brassard, G., Crépeau, C., Jozsa, R., Peres, A., and Wootters, W. K., (1993b), "Teleporting an unknown quantum state via dual classical and Einstein-Podolsky-Rosen channels", *Physical review letters*, Vol.70, No.13, pp.1895, 1993
- Bennett, C. H., DiVincenzo, D. P., Shor, P. W., Smolin, J. A., Terhal, B. M., and Wootters, W. K., (2001a), "Remote state preparation", *Physical Review Letters*, Vol.87, No.7, pp.077902, 2001
- Bennett, C. H., DiVincenzo, D. P., Shor, P. W., Smolin, J. A., Terhal, B. M., and Wootters, W. K., (2001b), "Remote state preparation", *Physical Review Letters*, Vol.87, No.7, pp.077902, 2001
- Bennett, C. H., DiVincenzo, D. P., Smolin, J. A., and Wootters, W. K., (1996), "Mixed-state entanglement and quantum error correction", *Physical Review A*, Vol.54, No.5, pp.3824, 1996
- Bennett, C. H., Hayden, P., Leung, D. W., Shor, P. W., and Winter, A., (2005), "Remote preparation of quantum states", *IEEE Transactions on Information Theory*, Vol.51, No.1, pp.56–74, 2005
- Bennett, C. H. and Wiesner, S. J., (1992), "Communication via one-and two-particle operators on Einstein-Podolsky-Rosen states", *Physical review letters*, Vol.69, No.20, pp.2881, 1992
- Berry, D. W., (2004), "Resources required for exact remote state preparation", *Physical Review A*, Vol.70, No.6, pp.062306, 2004
- Beveratos, A., Brouri, R., Gacoin, T., Villing, A., Poizat, J.-P., and Grangier, P., (2002), "Single photon quantum cryptography", *Physical review letters*, Vol.89, No.18, pp.187901, 2002
- Bloom, S., Korevaar, E., Schuster, J., and Willebrand, H., (2003), "Understanding the performance of free-space optics", *Journal of optical Networking*, Vol.2, No.6, pp.178–200, 2003

- Boileau, J.-C., Gottesman, D., Laflamme, R., Poulin, D., and Spekkens, R., (2004), "Robust polarization-based quantum key distribution over a collective-noise channel", *Physical review letters*, Vol.92, No.1, pp.017901, 2004
- Boone, K., Bourgoin, J.-P., Meyer-Scott, E., Heshami, K., Jennewein, T., and Simon, C., (2015), "Entanglement over global distances via quantum repeaters with satellite links", *Physical Review A*, Vol.91, No.5, pp.052325, 2015
- Boschi, D., Branca, S., De Martini, F., Hardy, L., and Popescu, S., (1998), "Experimental realization of teleporting an unknown pure quantum state via dual classical and Einstein-Podolsky-Rosen channels", *Physical Review Letters*, Vol.80, No.6, pp.1121, 1998
- Boström, K. and Felbinger, T., (2002), "Deterministic secure direct communication using entanglement", *Physical Review Letters*, Vol.89, No.18, pp.187902, 2002
- Boström, K. and Felbinger, T., (2008), "On the security of the ping-pong protocol", *Physics Letters A*, Vol.372, No.22, pp.3953–3956, 2008
- Botsinis, P., Ng, S. X., and Hanzo, L., (2013), "Quantum search algorithms, quantum wireless, and a low-complexity maximum likelihood iterative quantum multi-user detector design", *IEEE access*, Vol.1,, pp.94–122, 2013
- Bourennane, M., Eibl, M., Gaertner, S., Kurtsiefer, C., Cabello, A., and Weinfurter, H., (2004), "Decoherence-free quantum information processing with four-photon entangled states", *Physical review letters*, Vol.92, No.10, pp.107901, 2004
- Bourgoin, J., Meyer-Scott, E., Higgins, B. L., Helou, B., Erven, C., Huebel, H., Kumar, B., Hudson, D., D'Souza, I., Girard, R., et al., (2013), "A comprehensive design and performance analysis of low Earth orbit satellite quantum communication", *New Journal of Physics*, Vol.15, No.2, pp.023006, 2013
- Bouwmeester, D., Pan, J.-W., Mattle, K., Eibl, M., Weinfurter, H., and Zeilinger, A., (1997), "Experimental quantum teleportation", *Nature*, Vol.390, No.6660, pp.575–579, 1997
- Brassard, G. and Crépeau, C., (2005), "Quantum cryptography", In *Encyclopedia of Cryptography and Security*, pp. 495–500, Springer
- Brassard, G., Lütkenhaus, N., Mor, T., and Sanders, B. C., (2000), "Limitations on practical quantum cryptography", *Physical Review Letters*, Vol.85, No.6, pp.1330, 2000
- Brassard, G. and Salvail, L., (1993), "Secret-key reconciliation by public discussion", In *Workshop on the Theory and Application of of Cryptographic Techniques*, pp. 410–423, Springer
- Braunstein, S. L. and Van Loock, P., (2005), "Quantum information with continuous variables", *Reviews of Modern Physics*, Vol.77, No.2, pp.513, 2005
- Brendel, J., Gisin, N., Tittel, W., and Zbinden, H., (1999), "Pulsed energy-time entangled twin-photon source for quantum communication", *Physical Review Letters*, Vol.82, No.12, pp.2594, 1999
- Brida, G., Genovese, M., and Novero, C., (2000), "An application of two-photon entangled states to quantum metrology", *Journal of modern optics*, Vol.47, No.12, pp.2099–2104, 2000
- Briegel, H.-J., Dür, W., Cirac, J. I., and Zoller, P., (1998), "Quantum repeaters: the role of imperfect local operations in quantum communication", *Physical Review Letters*, Vol.81, No.26, pp.5932, 1998
- Bruß, D. and Lütkenhaus, N., (2000), "Quantum key distribution: from principles to practicalities", *Applicable Algebra in Engineering, Communication and Computing*, Vol.10, No.4, pp.383–399, 2000
- Bussières, F., Sangouard, N., Afzelius, M., de Riedmatten, H., Simon, C., and Tittel, W., (2013), "Prospective applications of optical quantum memories", *Journal of Modern Optics*, Vol.60, No.18, pp.1519–1537, 2013
- Buttler, W., Hughes, R., Kwiat, P., Lamoreaux, S., Luther, G., Morgan, G., Nordholt, J.,

- Peterson, C., and Simmons, C., (1998), "Practical free-space quantum key distribution over 1 km", *Physical Review Letters*, Vol.81, No.15, pp.3283, 1998
- Buttler, W. T., Hughes, R. J., Lamoreaux, S. K., Morgan, G. L., Nordholt, J. E., and Peterson, C. G., (2000), "Daylight quantum key distribution over 1.6 km", *Physical Review Letters*, Vol.84, No.24, pp.5652, 2000
- Buttler, W. T., Lamoreaux, S. K., Torgerson, J. R., Nickel, G., Donahue, C., and Peterson, C. G., (2003), "Fast, efficient error reconciliation for quantum cryptography", *Physical Review A*, Vol.67, No.5, pp.052303, 2003
- Cai, Q.-y., (2004), "The Ping-Pong protocol can be attacked without eavesdropping", *arXiv preprint quant-ph/0402052*, 2004
- Cai, Q.-Y., (2006), *Phys. Lett. A*, Vol.351,, pp.23, 2006
- Cai, Q.-Y. and Li, B.-W., (2004a), *Chin. Phys. Lett.*, Vol.21,, pp.601, 2004
- Cai, Q.-Y. and Li, B.-W., (2004b), "Improving the capacity of the Boström-Felbinger protocol", *Physical Review A*, Vol.69, No.5, pp.054301, 2004
- Calderaro, L., Agnesi, C., Dequal, D., Vedovato, F., Schiavon, M., Santamato, A., Luceri, V., Bianco, G., Vallone, G., and Villoresi, P., (2018), "Towards Quantum Communication from Global Navigation Satellite System", *arXiv preprint arXiv:1804.05022*, 2018
- Calloway, D., (1997), "Beer-lambert law", *Journal of Chemical Education*, Vol.74, No.7, pp.744, 1997
- Campbell, S., Tame, M., and Paternostro, M., (2009), "Characterizing multipartite symmetric Dicke states under the effects of noise", *New Journal of Physics*, Vol.11, No.7, pp.073039, 2009
- Cao, T. B. and Nguyen, B. A., (2013), "Deterministic controlled bidirectional remote state preparation", *Advances in Natural Sciences: Nanoscience and Nanotechnology*, Vol.5, No.1, pp.015003, 2013
- Carboneau, T. H. and Wisely, D. R., (1998), "Opportunities and challenges for optical wireless: the competitive advantage of free space telecommunications links in today's crowded marketplace", In *Voice, Video, and Data Communications*, pp. 119–128, International Society for Optics and Photonics
- Cerf, N. J., Bourennane, M., Karlsson, A., and Gisin, N., (2002), "Security of quantum key distribution using d-level systems", *Physical Review Letters*, Vol.88, No.12, pp.127902, 2002
- Cerf, N. J., Levy, M., and Van Assche, G., (2001), "Quantum distribution of Gaussian keys using squeezed states", *Physical Review A*, Vol.63, No.5, pp.052311, 2001
- Chamoli, A. and Bhandari, C., (2009), "Secure direct communication based on ping-pong protocol", *Quantum Information Processing*, Vol.8, No.4, pp.347–356, 2009
- Chefles, A., (1998), "Unambiguous discrimination between linearly independent quantum states", *Physics Letters A*, Vol.239, No.6, pp.339–347, 1998
- Chen, Q.-Q., Xia, Y., and An, N. B., (2013), "Flexible deterministic joint remote state preparation with a passive receiver", *Physica Scripta*, Vol.87, No.2, pp.025005, 2013
- Chen, Q.-Q., Xia, Y., Song, J., and An, N. B., (2010), "Joint remote state preparation of a W-type state via W-type states", *Physics Letters A*, Vol.374, No.44, pp.4483–4487, 2010
- Chen, Y., (2015), "Bidirectional quantum controlled teleportation by using a genuine six-qubit entangled state", *International Journal of Theoretical Physics*, Vol.54, No.1, pp.269–272, 2015
- Chiuri, A., Rosati, V., Vallone, G., Pádua, S., Imai, H., Giacomini, S., Macchiavello, C., and Mataloni, P., (2011), "Experimental realization of optimal noise estimation for a general Pauli channel", *Physical review letters*, Vol.107, No.25, pp.253602, 2011
- Chong, S.-K. and Hwang, T., (2010), "Quantum key agreement protocol based on BB84", *Optics Communications*, Vol.283, No.6, pp.1192–1195, 2010

- Choudhury, B. S. and Dhara, A., (2015), "Joint remote state preparation for two-qubit equatorial states", *Quantum Information Processing*, Vol.14, No.1, pp.373–379, 2015
- Churnside, J. H. and Rothman, L. S., (2004), "Dennis K. Killinger", 2004
- Clauser, J. F., Horne, M. A., Shimony, A., and Holt, R. A., (1969), "Proposed experiment to test local hidden-variable theories", *Physical review letters*, Vol.23, No.15, pp.880, 1969
- Cover, T. M. and Thomas, J. A., (2006), "Elements of Information Theory 2nd Edition (Wiley Series in Telecommunications and Signal Processing)", 2006
- Croal, C., Peuntinger, C., Heim, B., Khan, I., Marquardt, C., Leuchs, G., Wallden, P., Andersson, E., and Korolkova, N., (2016), "Free-space quantum signatures using heterodyne measurements", *Physical review letters*, Vol.117, No.10, pp.100503, 2016
- Cubitt, T. S., Leung, D., Matthews, W., and Winter, A., (2010), "Improving zero-error classical communication with entanglement", *Physical Review Letters*, Vol.104, No.23, pp.230503, 2010
- Cui, K., Wang, J., Zhang, H.-F., Luo, C.-L., Jin, G., and Chen, T.-Y., (2013), "A real-time design based on FPGA for expeditious error reconciliation in QKD system", *IEEE Transactions on Information Forensics and Security*, Vol.8, No.1, pp.184–190, 2013
- Curcio, J., Drummetter, L., and Knestrick, G., (1964), "An atlas of the absorption spectrum of the lower atmosphere from 5400Å to 8520Å", *Applied Optics*, Vol.3, No.12, pp.1401–1409, 1964
- Dai, H.-Y., Chen, P.-X., Liang, L.-M., and Li, C.-Z., (2006), "Classical communication cost and remote preparation of the four-particle GHZ class state", *Physics Letters A*, Vol.355, No.4, pp.285–288, 2006
- Dalla Chiara, M. L., Giuntini, R., and Greechie, R., (2013), *Reasoning in quantum theory: sharp and unsharp quantum logics*, volume 22, Springer Science & Business Media, 2013
- Davis, L., (1979), "Theory of electromagnetic beams", *Physical Review A*, Vol.19, No.3, pp.1177, 1979
- Degnan, J. J. and Klein, B. J., (1974), "Optical antenna gain. 2: Receiving antennas", *Applied optics*, Vol.13, No.10, pp.2397–2401, 1974
- Deng, F.-G. and Long, G. L., (2004a), "Secure direct communication with a quantum one-time pad", *Phys. Rev. A*, Vol.69, pp.052319, May 2004
- Deng, F.-G. and Long, G. L., (2004b), "Secure direct communication with a quantum one-time pad", *Physical Review A*, Vol.69, No.5, pp.052319, 2004
- Deutsch, D., (1985), "Quantum theory, the Church-Turing principle and the universal quantum computer", In *Proceedings of the Royal Society of London A: Mathematical, Physical and Engineering Sciences*, volume 400, pp. 97–117, The Royal Society
- Dieks, D., (1982), "Communication by EPR devices", *Physics Letters A*, Vol.92, No.6, pp.271–272, 1982
- Diffie, W. and Hellman, M., (1976), "New directions in cryptography", *IEEE transactions on Information Theory*, Vol.22, No.6, pp.644–654, 1976
- DiVincenzo, D. P. et al., (2000), "The physical implementation of quantum computation", *arXiv preprint quant-ph/0002077*, 2000
- Duan, L.-M., Lukin, M., Cirac, J. I., and Zoller, P., (2001), "Long-distance quantum communication with atomic ensembles and linear optics", *Nature*, Vol.414, No.6862, pp.413, 2001
- Duan, Y.-J. and Zha, X.-W., (2014), "Bidirectional quantum controlled teleportation via a six-qubit entangled state", *International Journal of Theoretical Physics*, Vol.53, No.11, pp.3780–3786, 2014
- Duan, Y.-J., Zha, X.-W., Sun, X.-M., and Xia, J.-F., (2014a), "Bidirectional quantum controlled teleportation via a maximally seven-qubit entangled state", *International Journal of Theoretical Physics*, Vol.53, No.8, pp.2697–2707, 2014

- Duan, Y.-J., Zha, X.-W., Sun, X.-M., and Xia, J.-F., (2014b), "Bidirectional quantum controlled teleportation via a maximally seven-qubit entangled state", *International Journal of Theoretical Physics*, Vol.53, No.8, pp.2697–2707, 2014
- Dušek, M., Haderka, O., and Hendrych, M., (1999), "Generalized beam-splitting attack in quantum cryptography with dim coherent states", *Optics communications*, Vol.169, No.1-6, pp.103–108, 1999
- Dušek, M., Jahma, M., and Lütkenhaus, N., (2000), "Unambiguous state discrimination in quantum cryptography with weak coherent states", *Physical Review A*, Vol.62, No.2, pp.022306, 2000
- Dynes, J., Choi, I., Sharpe, A., Dixon, A., Yuan, Z., Fujiwara, M., Sasaki, M., and Shields, A., (2012), "Stability of high bit rate quantum key distribution on installed fiber", *Optics Express*, Vol.20, No.15, pp.16339–16347, 2012
- Ekert, A. and Jozsa, R., (1996), "Quantum computation and Shor's factoring algorithm", *Reviews of Modern Physics*, Vol.68, No.3, pp.733, 1996
- Ekert, A. K., (1991), "Quantum cryptography based on Bells theorem", *Physical review letters*, Vol.67, No.6, pp.661, 1991
- Ekert, A. K., Rarity, J. G., Tapster, P. R., and Palma, G. M., (1992), "Practical quantum cryptography based on two-photon interferometry", *Physical Review Letters*, Vol.69, No.9, pp.1293, 1992
- Ellerbroek, B. L., (1994), "First-order performance evaluation of adaptive-optics systems for atmospheric-turbulence compensation in extended-field-of-view astronomical telescopes", *JOSA A*, Vol.11, No.2, pp.783–805, 1994
- Elterman, L., (1964), "Parameters for attenuation in the atmospheric windows for fifteen wavelengths", *Applied optics*, Vol.3, No.6, pp.745–749, 1964
- Er-long, M., Zheng-fu, H., Shun-sheng, G., Tao, Z., Da-Sheng, D., and Guang-Can, G., (2005), "Background noise of satellite-to-ground quantum key distribution", *New Journal of Physics*, Vol.7, No.1, pp.215, 2005
- Fern, J. and Whaley, K. B., (2008), "Lower bounds on the nonzero capacity of Pauli channels", *Physical Review A*, Vol.78, No.6, pp.062335, 2008
- Fischer, D. G., Mack, H., Cirone, M. A., and Freyberger, M., (2001), "Enhanced estimation of a noisy quantum channel using entanglement", *Physical Review A*, Vol.64, No.2, pp.022309, 2001
- Fu, H.-Z., Tian, X.-L., and Hu, Y., (2014), "A general method of selecting quantum channel for bidirectional quantum teleportation", *International Journal of Theoretical Physics*, Vol.53, No.6, pp.1840–1847, 2014
- Fuchs, C. A., Gisin, N., Griffiths, R. B., Niu, C.-S., and Peres, A., (1997), "Optimal eavesdropping in quantum cryptography. I. Information bound and optimal strategy", *Physical Review A*, Vol.56, No.2, pp.1163, 1997
- Fung, C.-H. F., Tamaki, K., and Lo, H.-K., (2006), "Performance of two quantum-key-distribution protocols", *Physical Review A*, Vol.73, No.1, pp.012337, 2006
- Fung, C.-h. F., Tamaki, K., Qi, B., Lo, H.-K., and Ma, X., (2008), "Security proof of quantum key distribution with detection efficiency mismatch", *arXiv preprint arXiv:0802.3788*, 2008
- Furusawa, A., Sørensen, J. L., Braunstein, S. L., Fuchs, C. A., Kimble, H. J., and Polzik, E. S., (1998), "Unconditional quantum teleportation", *Science*, Vol.282, No.5389, pp.706–709, 1998
- Gabay, M. and Arnon, S., (2006), "Quantum key distribution by a free-space MIMO system", *Journal of lightwave technology*, Vol.24, No.8, pp.3114–3120, 2006
- Gao, W.-B., Lu, C.-Y., Yao, X.-C., Xu, P., Gühne, O., Goebel, A., Chen, Y.-A., Peng, C.-Z., Chen, Z.-B., and Pan, J.-W., (2008), "Experimental demonstration of a hyper-entangled

- ten-qubit Schrödinger cat state”, *arXiv preprint arXiv:0809.4277*, 2008
- García-Patrón, R. and Cerf, N. J., (2009), ”Continuous-Variable Quantum Key Distribution Protocols Over Noisy Channels”, *Phys. Rev. Lett.*, Vol.102,, pp.130501, Mar 2009
- Gatenby, P. and Grant, M., (1991), ”Optical intersatellite links”, *Electronics & communication engineering journal*, Vol.3, No.6, pp.280–288, 1991
- Gay, S., Nagarajan, R., and Papanikolaou, N., (2005), ”Probabilistic Model-Checking of Quantum Protocols”, *arXiv preprint quant-ph/0504007*, 2005
- Gerhardt, I., Liu, Q., Lamas-Linares, A., Skaar, J., Kurtsiefer, C., and Makarov, V., (2010), ”Full-field implementation of a perfect eavesdropper on a quantum cryptography system”, *arXiv preprint arXiv:1011.0105*, 2010
- Gilhouse, Klein S and Jacobs, Irwin M and Weaver Jr, Lindsay A, *Spread spectrum multiple access communication system using satellite or terrestrial repeaters*, US Patent 4,901,307
- Girault, Marc and Pailles, Jean-Claude, *Authenticating or signature method with reduced computations*, US Patent 7,184,547
- Gisin, N., Ribordy, G., Tittel, W., and Zbinden, H., (2002), ”Quantum cryptography”, *Reviews of modern physics*, Vol.74, No.1, pp.145, 2002
- Gobby, C., Yuan, Z., and Shields, A., (2004), ”Quantum key distribution over 122 km of standard telecom fiber”, *Applied Physics Letters*, Vol.84, No.19, pp.3762–3764, 2004
- Goldenberg, L. and Vaidman, L., (1995), ”Quantum cryptography based on orthogonal states”, *Physical Review Letters*, Vol.75, No.7, pp.1239, 1995
- Gottesman, D., Lo, H.-K., Lutkenhaus, N., and Preskill, J., (2004), ”Security of quantum key distribution with imperfect devices”, In *Information Theory, 2004. ISIT 2004. Proceedings. International Symposium on*, pp. 136, IEEE
- Grosshans, F., Cerf, N. J., Wenger, J., Tualle-Brouri, R., and Grangier, P., (2003a), ”Virtual entanglement and reconciliation protocols for quantum cryptography with continuous variables”, *arXiv preprint quant-ph/0306141*, 2003
- Grosshans, F. and Grangier, P., (2002), ”Reverse reconciliation protocols for quantum cryptography with continuous variables”, *arXiv preprint quant-ph/0204127*, 2002
- Grosshans, F., Van Assche, G., Wenger, J., Brouri, R., Cerf, N. J., and Grangier, P., (2003b), ”Quantum key distribution using gaussian-modulated coherent states”, *Nature*, Vol.421, No.6920, pp.238, 2003
- Grover, L. K., (1997), ”Quantum mechanics helps in searching for a needle in a haystack”, *Physical review letters*, Vol.79, No.2, pp.325, 1997
- Gruneisen, M. T., Flanagan, M. B., and Sickmiller, B. A., (2017), ”Modeling satellite-Earth quantum channel downlinks with adaptive-optics coupling to single-mode fibers”, *Optical Engineering*, Vol.56, No.12, pp.126111, 2017
- Gruska, J., Imai, H., and Matsumoto, K., (2002), ”Power of quantum entanglement”, In *Foundations of Information Technology in the Era of Network and Mobile Computing*, pp. 3–22, Springer
- Guan, X.-W., Chen, X.-B., Wang, L.-C., and Yang, Y.-X., (2014a), ”Joint remote preparation of an arbitrary two-qubit state in noisy environments”, *International Journal of Theoretical Physics*, Vol.53, No.7, pp.2236–2245, 2014
- Guan, X.-W., Chen, X.-B., Wang, L.-C., and Yang, Y.-X., (2014b), ”Joint remote preparation of an arbitrary two-qubit state in noisy environments”, *International Journal of Theoretical Physics*, Vol.53, No.7, pp.2236–2245, 2014
- Guan, X.-W., Chen, X.-B., and Yang, Y.-X., (2012), ”Controlled-joint remote preparation of an arbitrary two-qubit state via non-maximally entangled channel”, *International Journal of Theoretical Physics*, Vol.51, No.11, pp.3575–3586, 2012
- Guha, S., Krovi, H., Fuchs, C. A., Dutton, Z., Slater, J. A., Simon, C., and Tittel, W., (2015), ”Rate-loss analysis of an efficient quantum repeater architecture”, *Physical Review*

- A, Vol.92, No.2, pp.022357, 2015
- Gyongyosi, L. and Imre, S., (2012), *Secure Long-Distance Quantum Communication over Optical Fiber Quantum Channels*, INTECH Open Access Publisher, 2012
- Hai-Jing, C. and He-Shan, S., (2006), "Quantum secure direct communication with W state", *Chinese Physics Letters*, Vol.23, No.2, pp.290, 2006
- Han, Y.-G., Yin, Z.-Q., Li, H.-W., Chen, W., Wang, S., Guo, G.-C., and Han, Z.-F., (2014), "Security of modified Ping-Pong protocol in noisy and lossy channel", *Scientific reports*, Vol.4,, pp.4936, 2014
- Hanzo, L., Haas, H., Imre, S., O'Brien, D., Rupp, M., and Gyongyosi, L., (2012), "Wireless myths, realities, and futures: from 3G/4G to optical and quantum wireless", *Proceedings of the IEEE*, Vol.100, No.Special Centennial Issue, pp.1853–1888, 2012
- Hillery, M., Bužek, V., and Berthiaume, A., (1999), "Quantum secret sharing", *Physical Review A*, Vol.59, No.3, pp.1829, 1999
- Hisgett, P. A., Rosenberg, D., Peterson, C. G., Hughes, R. J., Nam, S., Lita, A., Miller, A., and Nordholt, J., (2006), "Long-distance quantum key distribution in optical fibre", *New Journal of Physics*, Vol.8, No.9, pp.193, 2006
- Holzman, I. and Ivry, Y., "Superconducting Nanowires for Single-Photon Detection: Progress, Challenges, and Opportunities", *Advanced Quantum Technologies*,, pp.1800058
- Horikiri, T. and Kobayashi, T., (2006), "Decoy state quantum key distribution with a photon number resolved heralded single photon source", *Physical Review A*, Vol.73, No.3, pp.032331, 2006
- Horodecki, R., Horodecki, P., Horodecki, M., and Horodecki, K., (2009), "Quantum entanglement", *Reviews of modern physics*, Vol.81, No.2, pp.865, 2009
- Hosseinidehaj, N., Malaney, R., Ng, S. X., and Hanzo, L., (2017), "Satellite-Based Continuous-Variiable Quantum Communications: State-of-the-Art and a Predictive Outlook", *arXiv preprint arXiv:1712.09722*,, 2017
- Hua, C. and Chen, Y.-X., (2015), "A scheme for remote state preparation of a general pure qubit with optimized classical communication cost", *Quantum Information Processing*, Vol.14, No.3, pp.1069–1076, 2015
- Huang, J.-H. and Zhu, S.-Y., (2007), "Necessary and sufficient conditions for the entanglement sudden death under amplitude damping and phase damping", *Physical Review A*, Vol.76, No.6, pp.062322, 2007
- Huang, S., (2013), "Remote state preparation using positive operator-valued measures", *Physics Letters A*, Vol.377, No.6, pp.448–451, 2013
- Huelga, S. F., Plenio, M. B., and Vaccaro, J. A., (2002), "Remote control of restricted sets of operations: teleportation of angles", *Physical Review A*, Vol.65, No.4, pp.042316, 2002
- Huelga, S. F., Vaccaro, J. A., Chefles, A., and Plenio, M. B., (2001), "Quantum remote control: teleportation of unitary operations", *Physical Review A*, Vol.63, No.4, pp.042303, 2001
- Hughes, R., Nordholt, J. E., Morgan, G. L., and Peterson, C. G., (2002a), "Free space quantum key distribution over 10km in daylight and at night", In *Nonlinear Optics: Materials, Fundamentals and Applications*, pp. FA2, Optical Society of America
- Hughes, R. J., Buttler, W. T., Kwiat, P. G., Lamoreux, S., Morgan, G., Nordholt, J. E., and Peterson, C. G., (2000), "Quantum cryptography for secure satellite communications", In *Aerospace Conference Proceedings, 2000 IEEE*, volume 1, pp. 191–200, IEEE
- Hughes, Richard J and Buttler, William T and Kwiat, Paul G and Luther, Gabriel G and Morgan, George L and Nordholt, Jane E and Peterson, Charles G and Simmons, Charles M,*Secure communications with low-orbit spacecraft using quantum cryptography*,, US Patent 5,966,224
- Hughes, Richard J and Buttler, William T and Lamoreaux, Steve K and Morgan, George L

- and Nordholt, Jane E and Peterson, C Glen and Kwiat, Paul G,*Method and apparatus for free-space quantum key distribution in daylight*,, US Patent 6,748,083
- Hughes, R. J., Nordholt, J. E., Derkacs, D., and Peterson, C. G., (2002b), "Practical free-space quantum key distribution over 10 km in daylight and at night", *New journal of physics*, Vol.4, No.1, pp.43, 2002
- Hwang, W.-Y., (2003), "Quantum key distribution with high loss: toward global secure communication", *Physical Review Letters*, Vol.91, No.5, pp.057901, 2003
- Inoue, K., Waks, E., and Yamamoto, Y., (2002), "Differential phase shift quantum key distribution", *Physical Review Letters*, Vol.89, No.3, pp.037902, 2002
- Jennewein, T., Simon, C., Weihs, G., Weinfurter, H., and Zeilinger, A., (2000), "Quantum cryptography with entangled photons", *Physical Review Letters*, Vol.84, No.20, pp.4729, 2000
- Jiaguang, M., (1989), "The basic technologies of the acquisition, tracking and pointing systems", *Opto-Electronic Engineering*, Vol.16, No.3, pp.1–42, 1989
- Jiang, M. and Jiang, F., (2013), "Deterministic joint remote preparation of arbitrary multi-qudit states", *Physics Letters A*, Vol.377, No.38, pp.2524–2530, 2013
- Jin, X.-R., Ji, X., Zhang, Y.-Q., Zhang, S., Hong, S.-K., Yeon, K.-H., and Um, C.-I., (2006), "Three-party quantum secure direct communication based on GHZ states", *Physics Letters A*, Vol.354, No.1, pp.67–70, 2006
- Jun, L., Yi-Min, L., Hai-Jing, C., Shou-Hua, S., and Zhan-Jun, Z., (2006), "Revisiting quantum secure direct communication with W state", *Chinese Physics Letters*, Vol.23, No.10, pp.2652, 2006
- Karlsson, A. and Bourennane, M., (1998), "Quantum teleportation using three-particle entanglement", *Physical Review A*, Vol.58, No.6, pp.4394, 1998
- Kedar, D. and Arnon, S., (2004), "Urban optical wireless communication networks: the main challenges and possible solutions", *IEEE Communications Magazine*, Vol.42, No.5, pp.S2–S7, 2004
- Khan, I., Heim, B., Neuzner, A., and Marquardt, C., (2018), "Satellite-Based QKD", *Optics and Photonics News*, Vol.29, No.2, pp.26–33, 2018
- Kim, Y.-S., Lee, J.-C., Kwon, O., and Kim, Y.-H., (2013), "Protecting entanglement from decoherence using weak measurement and quantum measurement reversal", In *Quantum Communications and Quantum Imaging XI*, volume 8875, pp. 88750H, International Society for Optics and Photonics
- Klein, B. J. and Degnan, J. J., (1974), "Optical antenna gain. 1: Transmitting antennas", *Applied optics*, Vol.13, No.9, pp.2134–2141, 1974
- Klyshko, D., (1967), "Coherent photon decay in a nonlinear medium", *Soviet Journal of Experimental and Theoretical Physics Letters*, Vol.6,, pp.23, 1967
- Knoll, L. T., Schmiegelow, C. T., and Larotonda, M. A., (2014), "Remote state preparation of a photonic quantum state via quantum teleportation", *Applied Physics B*, Vol.115, No.4, pp.541–546, 2014
- Kraus, K., (1983), *States, effects and operations: fundamental notions of quantum theory*, Springer, 1983
- Kuang, L.-M., Chen, X., Chen, G.-H., and Ge, M.-L., (1997), "Jaynes-Cummings model with phase damping", *Physical Review A*, Vol.56, No.4, pp.3139, 1997
- Kurtsiefer, C., Zarda, P., Halder, M., Gorman, P. M., Tapster, P. R., Rarity, J., and Weinfurter, H., (2002a), "Long-distance free-space quantum cryptography", In *Photonics Asia 2002*, pp. 25–31, International Society for Optics and Photonics
- Kurtsiefer, C., Zarda, P., Halder, M., Weinfurter, H., Gorman, P., Tapster, P., and Rarity, J., (2002b), "Quantum cryptography: A step towards global key distribution", *Nature*, Vol.419, No.6906, pp.450–450, 2002

- Kwiat, P. G., Berglund, A. J., Altepeter, J. B., and White, A. G., (2000), "Experimental verification of decoherence-free subspaces", *Science*, Vol.290, No.5491, pp.498–501, 2000
- Li, J., Song, D., Guo, X., and JING, B., (2012), "An improved security detection strategy based on W state in Ping-pong protocol", *Chin J Electron*, Vol.21,, pp.117–120, 2012
- Li, X.-H., Deng, F.-G., Li, C.-Y., Liang, Y.-J., Zhou, P., and Zhou, H.-Y., (2006), "Deterministic secure quantum communication without maximally entangled states", *arXiv preprint quant-ph/0606007*, 2006
- Li, X.-H., Deng, F.-G., and Zhou, H.-Y., (2008), "Efficient quantum key distribution over a collective noise channel", *Physical Review A*, Vol.78, No.2, pp.022321, 2008
- Li, X.-H., Li, C.-Y., Deng, F.-G., Zhou, P., Liang, Y.-J., and Zhou, H.-Y., (2005), "Quantum secure direct communication with quantum encryption based on pure entangled states", *arXiv preprint quant-ph/0512014*, 2005
- Li, Y.-h. and Jin, X.-m., (2016), "Bidirectional controlled teleportation by using nine-qubit entangled state in noisy environments", *Quantum Information Processing*, Vol.15, No.2, pp.929–945, 2016
- Li, Y.-H., Li, X.-L., Sang, M.-H., Nie, Y.-Y., and Wang, Z.-s., (2013), "Bidirectional controlled quantum teleportation and secure direct communication using five-qubit entangled state", *Quantum information processing*, Vol.12, No.12, pp.3835–3844, 2013
- Li, Y.-h. and Nie, L.-p., (2013), "Bidirectional controlled teleportation by using a five-qubit composite GHZ-Bell state", *International Journal of Theoretical Physics*, Vol.52, No.5, pp.1630–1634, 2013
- Liang, Y., Poor, H. V., Shamai, S., et al., (2009), "Information theoretic security", *Foundations and Trends® in Communications and Information Theory*, Vol.5, No.4–5, pp.355–580, 2009
- Liao, S.-K., Cai, W.-Q., Handsteiner, J., Liu, B., Yin, J., Zhang, L., Rauch, D., Fink, M., Ren, J.-G., Liu, W.-Y., et al., (2018), "Satellite-relayed intercontinental quantum network", *Physical Review Letters*, Vol.120, No.3, pp.030501, 2018
- Liao, S.-K., Cai, W.-Q., Liu, W.-Y., Zhang, L., Li, Y., Ren, J.-G., Yin, J., Shen, Q., Cao, Y., Li, Z.-P., et al., (2017a), "Satellite-to-ground quantum key distribution", *Nature*, Vol.549, No.7670, pp.43, 2017
- Liao, S.-K., Lin, J., Ren, J.-G., Liu, W.-Y., Qiang, J., Yin, J., Li, Y., Shen, Q., Zhang, L., Liang, X.-F., et al., (2017b), "Space-to-Ground Quantum Key Distribution Using a Small-Sized Payload on Tiangong-2 Space Lab", *Chinese Physics Letters*, Vol.34, No.9, pp.090302, 2017
- Lidar, D. A., Chuang, I. L., and Whaley, K. B., (1998), "Decoherence-free subspaces for quantum computation", *Physical Review Letters*, Vol.81, No.12, pp.2594, 1998
- Lindenthal, M., Resch, K., Blauensteiner, B., Boehm, H., Fedrizzi, A., Poppe, A., Taraba, M., Ursin, R., Walther, P., Kurtsiefer, C., et al., "Long-distance free-space distribution of quantum entanglement over Vienna"
- Liu, C., Pang, K., Zhao, J., Li, L., Zhao, Y., Du, J., Ren, Y., Xie, G., Zhao, Z., Song, H., et al., (2018), "Demonstration of single-end adaptive optics compensation for emulated turbulence in a Bi-directional 10-Mbits/s per channel free-space quantum communication link using orbital-angular-momentum encoding", In *CLEO: QELS\_Fundamental Science*, pp. JTh5B-2, Optical Society of America
- Liu, L. L. and Hwang, T., (2014), "Controlled remote state preparation protocols via AKLT states", *Quantum information processing*, Vol.13, No.7, pp.1639–1650, 2014
- Liu, W.-T., Wu, W., Ou, B.-Q., Chen, P.-X., Li, C.-Z., and Yuan, J.-M., (2007), "Experimental remote preparation of arbitrary photon polarization states", *Physical Review A*, Vol.76, No.2, pp.022308, 2007
- Liu, Y., Chen, T.-Y., Wang, J., Cai, W.-Q., Wan, X., Chen, L.-K., Wang, J.-H., Liu, S.-B.,

- Liang, H., Yang, L., et al., (2010), "Decoy-state quantum key distribution with polarized photons over 200 km", *Optics express*, Vol.18, No.8, pp.8587–8594, 2010
- Lo, H.-K., (2000), "Classical-communication cost in distributed quantum-information processing: a generalization of quantum-communication complexity", *Physical Review A*, Vol.62, No.1, pp.012313, 2000
- Lo, H.-K. and Chau, H. F., (1999), "Unconditional security of quantum key distribution over arbitrarily long distances", *science*, Vol.283, No.5410, pp.2050–2056, 1999
- Lo, H.-K., Chau, H. F., and Ardehali, M., (2005a), "Efficient quantum key distribution scheme and a proof of its unconditional security", *Journal of Cryptology*, Vol.18, No.2, pp.133–165, 2005
- Lo, H.-K., Ma, X., and Chen, K., (2005b), "Decoy state quantum key distribution", *Physical review letters*, Vol.94, No.23, pp.230504, 2005
- Long, G.-l., Deng, F.-g., Wang, C., Li, X.-h., Wen, K., and Wang, W.-y., (2007), "Quantum secure direct communication and deterministic secure quantum communication", *Frontiers of Physics in China*, Vol.2, No.3, pp.251–272, 2007
- Long, G.-L. and Liu, X.-S., (2002), "Theoretically efficient high-capacity quantum-key-distribution scheme", *Physical Review A*, Vol.65, No.3, pp.032302, 2002
- Loudon, R., (2000), *The quantum theory of light*, OUP Oxford, 2000
- Louisell, W. H., (1964), *Radiation and noise in quantum electronics*, McGraw-Hill, 1964
- Lu, C.-Y., Zhou, X.-Q., Gühne, O., Gao, W.-B., Zhang, J., Yuan, Z.-S., Goebel, A., Yang, T., and Pan, J.-W., (2006a), "Experimental entanglement of six photons in graph states", *arXiv preprint quant-ph/0609130*, 2006
- Lu, C.-Y., Zhou, X.-Q., Gühne, O., Gao, W.-B., Zhang, J., Yuan, Z.-S., Goebel, A., Yang, T., and Pan, J.-W., (2006b), "Experimental entanglement of six photons in graph states", *arXiv preprint quant-ph/0609130*, 2006
- Lucamarini, M. and Mancini, S., (2005), "Secure deterministic communication without entanglement", *Physical review letters*, Vol.94, No.14, pp.140501, 2005
- Lucamarini, M., Patel, K., Dynes, J., Fröhlich, B., Sharpe, A., Dixon, A., Yuan, Z., Penty, R., and Shields, A., (2013), "Efficient decoy-state quantum key distribution with quantified security", *Optics express*, Vol.21, No.21, pp.24550–24565, 2013
- Luo, M.-X., Chen, X.-B., Yang, Y.-X., and Niu, X.-X., (2012), "Experimental architecture of joint remote state preparation", *Quantum Information Processing*, Vol.11, No.3, pp.751–767, 2012
- Luo, M.-X., Deng, Y., Chen, X.-B., and Yang, Y.-X., (2013a), "The faithful remote preparation of general quantum states", *Quantum information processing*, pp.1–16, 2013
- Luo, M.-X., Peng, J.-Y., and Mo, Z.-W., (2013b), "Joint remote preparation of an arbitrary five-qubit Brown state", *International Journal of Theoretical Physics*, Vol.52, No.2, pp.644–653, 2013
- Lütkenhaus, N., (2000), "Security against individual attacks for realistic quantum key distribution", *Physical Review A*, Vol.61, No.5, pp.052304, 2000
- Lütkenhaus, N. and Jahma, M., (2002), "Quantum key distribution with realistic states: photon-number statistics in the photon-number splitting attack", *New Journal of Physics*, Vol.4, No.1, pp.44, 2002
- Ma, P.-C. and Zhan, Y.-B., (2010), "Scheme for remotely preparing a four-particle entangled cluster-type state", *Optics communications*, Vol.283, No.12, pp.2640–2643, 2010
- Ma, X., Fung, C.-H. F., and Lo, H.-K., (2007), "Quantum key distribution with entangled photon sources", *Physical Review A*, Vol.76, No.1, pp.012307, 2007
- Ma, X., Qi, B., Zhao, Y., and Lo, H.-K., (2005), "Practical decoy state for quantum key distribution", *Physical Review A*, Vol.72, No.1, pp.012326, 2005
- Makarov, V., Anisimov, A., and Skaar, J., (2006), "Effects of detector efficiency mismatch

- on security of quantum cryptosystems”, *Physical Review A*, Vol.74, No.2, pp.022313, 2006
- Manning, T., (2009), *Microwave radio transmission design guide*, Artech House, 2009
- Marcikic, I., Lamas-Linares, A., and Kurtsiefer, C., (2006), ”Free-space quantum key distribution with entangled photons”, *Applied Physics Letters*, Vol.89, No.10, pp.101122, 2006
- Marques, B., Matoso, A., Pimenta, W., Gutiérrez-Esparza, A., Santos, M., and Pádua, S., (2015), ”Experimental simulation of decoherence in photonics qudits”, *Scientific reports*, Vol.5,, 2015
- Mattle, K., Weinfurter, H., Kwiat, P. G., and Zeilinger, A., (1996), ”Dense coding in experimental quantum communication”, *Physical Review Letters*, Vol.76, No.25, pp.4656, 1996
- Mayers, D., (2001), ”Unconditional security in quantum cryptography”, *Journal of the ACM (JACM)*, Vol.48, No.3, pp.351–406, 2001
- McFarland, D. J., McCane, L. M., David, S. V., and Wolpaw, J. R., (1997), ”Spatial filter selection for EEG-based communication”, *Electroencephalography and clinical Neurophysiology*, Vol.103, No.3, pp.386–394, 1997
- Mélen, G., (2016), *Integrated Quantum Key Distribution sender unit for hand-held platforms*, PhD thesis, lmu
- Meyer-Scott, E., Yan, Z., MacDonald, A., Bourgoin, J.-P., Hübel, H., and Jennewein, T., (2011), ”How to implement decoy-state quantum key distribution for a satellite uplink with 50-dB channel loss”, *Physical Review A*, Vol.84, No.6, pp.062326, 2011
- Mintert, F., Carvalho, A. R., Kuś, M., and Buchleitner, A., (2005), ”Measures and dynamics of entangled states”, *Physics Reports*, Vol.415, No.4, pp.207–259, 2005
- Monz, T., Schindler, P., Barreiro, J. T., Chwalla, M., Nigg, D., Coish, W. A., Harlander, M., Hänsel, W., Hennrich, M., and Blatt, R., (2011), ”14-qubit entanglement: Creation and coherence”, *Physical Review Letters*, Vol.106, No.13, pp.130506, 2011
- Munro, W., Stephens, A., Devitt, S., Harrison, K., and Nemoto, K., (2012), ”Quantum communication without the necessity of quantum memories”, *Nature Photonics*, Vol.6, No.11, pp.777–781, 2012
- Muralidharan, S., Kim, J., Lütkenhaus, N., Lukin, M. D., and Jiang, L., (2014), ”Ultrafast and fault-tolerant quantum communication across long distances”, *Physical review letters*, Vol.112, No.25, pp.250501, 2014
- Myatt, C. J., King, B. E., Turchette, Q. A., Sackett, C. A., Kielpinski, D., Itano, W. M., Monroe, C., and Wineland, D. J., (2000), ”Decoherence of quantum superpositions through coupling to engineered reservoirs”, *Nature*, Vol.403, No.6767, pp.269–273, 2000
- Naik, D., Peterson, C., White, A., Berglund, A., and Kwiat, P. G., (2000), ”Entangled state quantum cryptography: eavesdropping on the Ekert protocol”, *Physical Review Letters*, Vol.84, No.20, pp.4733, 2000
- Nelson, Eric A and O’meara, Michael B,*System and method for communication between airborne and ground-based entities*,, US Patent 6,760,778
- Nguyen, B. A., (2004), ”Quantum dialogue”, *Physics Letters A*, Vol.328, No.1, pp.6–10, 2004
- Nguyen, B. A., Cao, T. B., Nung, V. D., and Kim, J., (2011), ”Remote state preparation with unit success probability”, *Advances in Natural Sciences: Nanoscience and Nanotechnology*, Vol.2, No.3, pp.035009, 2011
- Nguyen, B. A. and Kim, J., (2008), ”Joint remote state preparation”, *Journal of Physics B: Atomic, Molecular and Optical Physics*, Vol.41, No.9, pp.095501, 2008
- Nielsen, Michael A and Chuang, Isaac,*Quantum computation and quantum information*, Nielsen, M. A. and Chuang, I. L., (2000), ”Quantum computation and quantum information”, *Quantum*, Vol.546,, pp.1231, 2000

- Nielsen, M. A. and Chuang, I. L., (2010), *Quantum computation and quantum information*, Cambridge university press, 2010
- Nogues, G., Rauschenbeutel, A., Osnaghi, S., Brune, M., Raimond, J., and Haroche, S., (1999), "Seeing a single photon without destroying it", *Nature*, Vol.400, No.6741, pp.239, 1999
- Nordholt, J. E., Hughes, R. J., Morgan, G. L., Peterson, C. G., and Wipf, C. C., (2002), "Present and future free-space quantum key distribution", In *Free-Space Laser Communication Technologies XIV*, volume 4635, pp. 116–127, International Society for Optics and Photonics
- O'Brien, J. L., Pryde, G. J., White, A. G., Ralph, T. C., and Branning, D., (2003), "Demonstration of an all-optical quantum controlled-NOT gate", *Nature*, Vol.426, No.6964, pp.264–267, 2003
- O'Brien, J. L., Pryde, G. J., White, A. G., Ralph, T. C., and Branning, D., (2004), "Demonstration of an all-optical quantum controlled-NOT gate", *arXiv preprint quant-ph/0403062*, 2004
- Omkar, S., Srikanth, R., and Banerjee, S., (2013), "Dissipative and non-dissipative single-qubit channels: dynamics and geometry", *Quantum information processing*, Vol.12, No.12, pp.3725–3744, 2013
- Owens, P., Rarity, J., Tapster, P., Knight, D., and Townsend, P., (1994), "Photon counting with passively quenched germanium avalanche", *Applied Optics*, Vol.33, No.30, pp.6895–6901, 1994
- Pan, J.-W., Gasparoni, S., Ursin, R., Weihs, G., and Zeilinger, A., (2003), "Experimental entanglement purification of arbitrary unknown states", *Nature*, Vol.423, No.6938, pp.417–422, 2003
- Pantell, R. H. and Puthoff, H. E., (1969), *Fundamentals of quantum electronics*, John Wiley & Sons, 1969
- Pappa, A., Chailloux, A., Diamanti, E., and Kerenidis, I., (2011), "Practical quantum coin flipping", *Phys. Rev. A*, Vol.84, pp.052305, Nov 2011
- Pathak, A., (2013), *Elements of quantum computation and quantum communication*, Taylor & Francis, 2013
- Pathak, A. and Banerjee, A., (2011), "Efficient quantum circuits for perfect and controlled teleportation of n-qubit non-maximally entangled states of generalized Bell-type", *International Journal of Quantum Information*, Vol.9, No.supp01, pp.389–403, 2011
- Pati, A. K., (2000), "Minimum classical bit for remote preparation and measurement of a qubit", *Physical Review A*, Vol.63, No.1, pp.014302, 2000
- Pearson, J. E., (1976), "Atmospheric turbulence compensation using coherent optical adaptive techniques", *Applied optics*, Vol.15, No.3, pp.622–631, 1976
- Peloso, M. P., Gerhardt, I., Ho, C., Lamas-Linares, A., and Kurtsiefer, C., (2009), "Daylight operation of a free space, entanglement-based quantum key distribution system", *New Journal of Physics*, Vol.11, No.4, pp.045007, 2009
- Pelton, J. N., (2006), *The basics of satellite communications*, Intl. Engineering Consortiu, 2006
- Peng, C.-Z., Yang, T., Bao, X.-H., Zhang, J., Jin, X.-M., Feng, F.-Y., Yang, B., Yang, J., Yin, J., Zhang, Q., et al., (2005), "Experimental free-space distribution of entangled photon pairs over 13 km: towards satellite-based global quantum communication", *Physical review letters*, Vol.94, No.15, pp.150501, 2005
- Peng, C.-Z., Zhang, J., Yang, D., Gao, W.-B., Ma, H.-X., Yin, H., Zeng, H.-P., Yang, T., Wang, X.-B., and Pan, J.-W., (2007), "Experimental long-distance decoy-state quantum key distribution based on polarization encoding", *Physical review letters*, Vol.98, No.1, pp.010505, 2007

- Peng, J.-Y., Luo, M.-X., and Mo, Z.-W., (2013), "Joint remote state preparation of arbitrary two-particle states via GHZ-type states", *Quantum information processing*, Vol.12, No.7, pp.2325–2342, 2013
- Peng, X., Zhu, X., Fang, X., Feng, M., Liu, M., and Gao, K., (2003a), "Experimental implementation of remote state preparation by nuclear magnetic resonance", *Physics Letters A*, Vol.306, No.5, pp.271–276, 2003
- Peng, X., Zhu, X., Fang, X., Feng, M., Liu, M., and Gao, K., (2003b), "Experimental implementation of remote state preparation by nuclear magnetic resonance", *Physics Letters A*, Vol.306, No.5, pp.271–276, 2003
- Peng-Cheng, M. and You-Bang, Z., (2008), "Scheme for probabilistic remotely preparing a multi-particle entangled GHZ state", *Chinese Physics B*, Vol.17, No.2, pp.445, 2008
- Peres, A., (2006), *Quantum theory: concepts and methods*, volume 57, Springer Science & Business Media, 2006
- Peters, N. A., Barreiro, J. T., Goggin, M. E., Wei, T.-C., and Kwiat, P. G., (2005), "Remote state preparation: arbitrary remote control of photon polarization", *Physical review letters*, Vol.94, No.15, pp.150502, 2005
- Pfennigbauer, M., Aspelmeyer, M., Leeb, W., Baister, G., Dreischer, T., Jennewein, T., Neckamm, G., Perdigues, J., Weinfurter, H., and Zeilinger, A., (2005), "Satellite-based quantum communication terminal employing state-of-the-art technology", *Journal of Optical Networking*, Vol.4, No.9, pp.549–560, 2005
- Pirandola, S., García-Patrón, R., Braunstein, S. L., and Lloyd, S., (2009), "Direct and Reverse Secret-Key Capacities of a Quantum Channel", *Phys. Rev. Lett.*, Vol.102, pp.050503, Feb 2009
- Poppe, A., Fedrizzi, A., Ursin, R., Böhm, H., Lorünser, T., Maurhardt, O., Peev, M., Suda, M., Kurtsiefer, C., Weinfurter, H., et al., (2004), "Practical quantum key distribution with polarization entangled photons", *Optics Express*, Vol.12, No.16, pp.3865–3871, 2004
- Preskill, J., (1998), "Lecture notes for physics 229: Quantum information and computation", *California Institute of Technology*, Vol.16, 1998
- Prevedel, R., Lu, Y., Matthews, W., Kaltenbaek, R., and Resch, K. J., (2011), "Entanglement-enhanced classical communication over a noisy classical channel", *Physical review letters*, Vol.106, No.11, pp.110505, 2011
- Pugh, C. J., Kaiser, S., Bourgoin, J.-P., Jin, J., Sultana, N., Agne, S., Anisimova, E., Makarov, V., Choi, E., Higgins, B. L., et al., (2017), "Airborne demonstration of a quantum key distribution receiver payload", *Quantum Science and Technology*, Vol.2, No.2, pp.024009, 2017
- Qi, B., Liu, S., Shen, Q., Liao, S., Cai, W., Lin, Z., Liu, W., Peng, C., and An, Q., (2015), "A compact readout electronics for the ground station of a quantum communication satellite", *IEEE Transactions on Nuclear Science*, Vol.62, No.3, pp.883–888, 2015
- Rådmark, M., Wiesniak, M., Żukowski, M., and Bourennane, M., (2013), "Experimental multilocation remote state preparation", *Physical Review A*, Vol.88, No.3, pp.032304, 2013
- Ralph, T. C., (1999), "Continuous variable quantum cryptography", *Physical Review A*, Vol.61, No.1, pp.010303, 1999
- Rappaport, T. S., MacCartney, G. R., Samimi, M. K., and Sun, S., (2015), "Wideband millimeter-wave propagation measurements and channel models for future wireless communication system design", *IEEE Transactions on Communications*, Vol.63, No.9, pp.3029–3056, 2015
- Rarity, J., Tapster, P., and Gorman, P., (2001), "Secure free-space key exchange to 1.9 km and beyond", *Journal of Modern optics*, Vol.48, No.13, pp.1887–1901, 2001
- Rarity, J., Tapster, P., Gorman, P., and Knight, P., (2002), "Ground to satellite secure key

- exchange using quantum cryptography”, *New Journal of Physics*, Vol.4, No.1, pp.82, 2002
- Ren, J.-G., Xu, P., Yong, H.-L., Zhang, L., Liao, S.-K., Yin, J., Liu, W.-Y., Cai, W.-Q., Yang, M., Li, L., et al., (2017), ”Ground-to-satellite quantum teleportation”, *Nature*, Vol.549, No.7670, pp.70, 2017
- Renner, R., Gisin, N., and Kraus, B., (2005), ”Information-theoretic security proof for quantum-key-distribution protocols”, *Phys. Rev. A*, Vol.72,, pp.012332, Jul 2005
- Resch, K., Lindenthal, M., Blauensteiner, B., Böhm, H., Fedrizzi, A., Kurtsiefer, C., Poppe, A., Schmitt-Manderbach, T., Taraba, M., Ursin, R., et al., (2005), ”Distributing entanglement and single photons through an intra-city, free-space quantum channel”, *Optics Express*, Vol.13, No.1, pp.202–209, 2005
- Ribordy, G., Brendel, J., Gautier, J.-D., Gisin, N., and Zbinden, H., (2000), ”Long-distance entanglement-based quantum key distribution”, *Physical Review A*, Vol.63, No.1, pp.012309, 2000
- Ricklin, J. C. and Davidson, F. M., (2002), ”Atmospheric turbulence effects on a partially coherent Gaussian beam: implications for free-space laser communication”, *JOSA A*, Vol.19, No.9, pp.1794–1802, 2002
- Rosen, Harold A, *Satellite communications system employing frequency reuse*,, US Patent 4,879,711
- Rosenberg, D., Harrington, J. W., Rice, P. R., Hiskett, P. A., Peterson, C. G., Hughes, R. J., Lita, A. E., Nam, S. W., and Nordholt, J. E., (2007), ”Long-distance decoy-state quantum key distribution in optical fiber”, *Physical review letters*, Vol.98, No.1, pp.010503, 2007
- Sangouard, N., Simon, C., De Riedmatten, H., and Gisin, N., (2011), ”Quantum repeaters based on atomic ensembles and linear optics”, *Reviews of Modern Physics*, Vol.83, No.1, pp.33, 2011
- Scarani, V., (2004), ”V. Scarani, A. Acín, G. Ribordy, and N. Gisin, Phys. Rev. Lett. 92, 057901 (2004).”, *Phys. Rev. Lett.*, Vol.92,, pp.057901, 2004
- Scarani, V., Acin, A., Ribordy, G., and Gisin, N., (2004), ”Quantum cryptography protocols robust against photon number splitting attacks for weak laser pulse implementations”, *Physical review letters*, Vol.92, No.5, pp.057901, 2004
- Scarani, V., Bechmann-Pasquinucci, H., Cerf, N. J., Dušek, M., Lütkenhaus, N., and Peev, M., (2009), ”The security of practical quantum key distribution”, *Reviews of modern physics*, Vol.81, No.3, pp.1301, 2009
- Scarani, V. and Gisin, N., (2001), ”Quantum key distribution between  $N$  partners: Optimal eavesdropping and Bell’s inequalities”, *Phys. Rev. A*, Vol.65,, pp.012311, Dec 2001
- Schmitt-Manderbach, T., (2007), *Long distance free-space quantum key distribution*, PhD thesis, lmu
- Schmitt-Manderbach, T., Weier, H., Fürst, M., Ursin, R., Tiefenbacher, F., Scheidl, T., Perdigues, J., Sodnik, Z., Kurtsiefer, C., Rarity, J. G., et al., (2007), ”Experimental demonstration of free-space decoy-state quantum key distribution over 144 km”, *Physical Review Letters*, Vol.98, No.1, pp.010504, 2007
- Semenov, A., Töppel, F., Vasylyev, D. Y., Gomonay, H., and Vogel, W., (2012), ”Homodyne detection for atmosphere channels”, *Physical Review A*, Vol.85, No.1, pp.013826, 2012
- Shannon, C., (1948), ”A mathematical theory of communication, bell System technical Journal 27: 379-423 and 623–656”, *Mathematical Reviews (MathSciNet)*: MR10, 133e,, 1948
- Shannon, C. E., (1949), ”Communication theory of secrecy systems”, *Bell Labs Technical Journal*, Vol.28, No.4, pp.656–715, 1949
- Sharaf, M. S., (2011), ”Quantum cryptography: An emerging technology in network security”, In *Technologies for Homeland Security (HST), 2011 IEEE International Conference on*, pp. 13–19, IEEE

- Sharma, R. D., Thapliyal, K., Pathak, A., Pan, A. K., and De, A., (2016a), "Which verification qubits perform best for secure communication in noisy channel?", *Quantum Information Processing*, Vol.15, No.4, pp.1703–1718, 2016
- Sharma, V., (2014), "Feasibility of temperature sensors in railway coaches", *Int. J. Sci. Eng. Res.*, Vol.5, No.2, pp.881–884, 2014
- Sharma, V., (2016), "Effect of Noise on Practical Quantum Communication Systems.", *Defence Science Journal*, Vol.66, No.2, 2016
- Sharma, V. and Banerjee, S., (2017), "Analysis of atmospheric effects on satellite based quantum communication: A comparative study", *arXiv preprint arXiv:1711.08281*, 2017
- Sharma, V. and Banerjee, S., (2018), "Analysis of Quantum Key Distribution based Satellite Communication", *arXiv:1807.07544*, 2018
- Sharma, V. and Banerjee, S., (2019), "Analysis of atmospheric effects on satellite-based quantum communication: a comparative study", *Quantum Information Processing*, Vol.18, No.3, pp.67, 2019
- Sharma, V. and Panchariya, P., (2015), "Experimental use of electronic nose for odour detection", *International Journal of Engineering Systems Modelling and Simulation*, Vol.7, No.4, pp.238–243, 2015
- Sharma, V. and Sharma, R., (2014), "Analysis of spread spectrum in MATLAB", *International Journal of Scientific & Engineering Research*, Vol.5, No.1, 2014
- Sharma, V., Shrikant, U., Srikanth, R., and Banerjee, S., (2018), "Decoherence can help quantum cryptographic security", *arXiv preprint arXiv:1712.06519*, *Quantum Information Processing*, Vol.17, No.8, pp.207, 2018
- Sharma, V., Shukla, C., Banerjee, S., and Pathak, A., (2015), "Controlled bidirectional remote state preparation in noisy environment: a generalized view", *arXiv preprint arXiv:1409.0833*, *Quantum Information Processing*, Vol.14, No.9, pp.3441–3464, 2015
- Sharma, V., Thapliyal, K., Pathak, A., and Banerjee, S., (2016b), "A comparative study of protocols for secure quantum communication under noisy environment: single-qubit-based protocols versus entangled-state-based protocols", *arXiv preprint arXiv:1603.00178*, *Quantum Information Processing*, Vol.15, No.11, pp.4681–4710, 2016
- Sheng, Y.-B. and Deng, F.-G., (2010), "Efficient quantum entanglement distribution over an arbitrary collective-noise channel", *Physical Review A*, Vol.81, No.4, pp.042332, 2010
- Shenoy-Hejamadi, A., Pathak, A., and Radhakrishna, S., (2017), "Quantum Cryptography: Key Distribution and Beyond", *Quanta*, Vol.6, No.1, pp.1–47, 2017
- Shi, G.-F., Xi, X.-Q., Hu, M.-L., and Yue, R.-H., (2010), "Quantum secure dialogue by using single photons", *Optics Communications*, Vol.283, No.9, pp.1984–1986, 2010
- Shi, R.-h., Mu, Y., Zhong, H., Zhang, S., and Cui, J., (2016), "Quantum private set intersection cardinality and its application to anonymous authentication", *Information Sciences*, Vol.370, pp.147–158, 2016
- Shields, A. and Yuan, Z., (2007), "Key to the quantum industry", *Physics World*, Vol.20, No.3, pp.24, 2007
- Shor, P. W., (1999), "Polynomial-time algorithms for prime factorization and discrete logarithms on a quantum computer", *SIAM review*, Vol.41, No.2, pp.303–332, 1999
- Shukla, C., (2015), "Design and analysis of quantum communication protocols", 2015
- Shukla, C., Alam, N., and Pathak, A., (2014), "Protocols of quantum key agreement solely using Bell states and Bell measurement", *Quantum information processing*, Vol.13, No.11, pp.2391–2405, 2014
- Shukla, C., Banerjee, A., and Pathak, A., (2013a), "Bidirectional controlled teleportation by using 5-qubit states: a generalized view", *International Journal of Theoretical Physics*, Vol.52, No.10, pp.3790–3796, 2013
- Shukla, C., Kothari, V., Banerjee, A., and Pathak, A., (2013b), "On the group-theoretic

- structure of a class of quantum dialogue protocols”, *Physics Letters A*, Vol.377, No.7, pp.518–527, 2013
- Shukla, C. and Pathak, A., (2013), ”Hierarchical quantum communication”, *Physics Letters A*, Vol.377, No.19, pp.1337–1344, 2013
- Shukla, C., Pathak, A., and Srikanth, R., (2012), ”Beyond the Goldenberg-Vaidman protocol: Secure and efficient quantum communication using arbitrary, orthogonal, multi-particle quantum states”, *Int. J. Quantum Inf.*, Vol.10,, pp.1241009, 2012
- Song, H.-T. and Xi, Z.-R., (2011), ”More entanglement, less reliability”, In *Control Conference (CCC), 2011 30th Chinese*, pp. 5328–5331, IEEE
- Srikanth, R. and Banerjee, S., (2007), ”An environment-mediated quantum deleter”, *Physics Letters A*, Vol.367, No.4, pp.295–299, 2007
- Srikanth, R. and Banerjee, S., (2008), ”Squeezed generalized amplitude damping channel”, *Physical Review A*, Vol.77, No.1, pp.012318, 2008
- Srinatha, N., Omkar, S., Srikanth, R., Banerjee, S., and Pathak, A., (2014), ”The quantum cryptographic switch”, *Quantum information processing*, pp.1–12, 2014
- Stucki, D., Gisin, N., Guinnard, O., Ribordy, G., and Zbinden, H., (2002), ”Quantum key distribution over 67 km with a plug&play system”, *New Journal of Physics*, Vol.4, No.1, pp.41, 2002
- Takesue, H., Nam, S. W., Zhang, Q., Hadfield, R. H., Honjo, T., Tamaki, K., and Yamamoto, Y., (2007), ”Quantum key distribution over a 40-dB channel loss using superconducting single-photon detectors”, *Nature photonics*, Vol.1, No.6, pp.343, 2007
- Teich, M. C. and Saleh, B., (1991), ”Fundamentals of photonics”, *Canada, Wiley Interscience*, Vol.3., 1991
- Thapliyal, K., Banerjee, S., and Pathak, A., (2016), ”Tomograms for open quantum systems: in (finite) dimensional optical and spin systems”, *Annals of Physics*, Vol.366,, pp.148–167, 2016
- Thapliyal, K., Banerjee, S., Pathak, A., Omkar, S., and Ravishankar, V., (2015), ”Quasiprobability distributions in open quantum systems: spin-qubit systems”, *Annals of Physics*, Vol.362,, pp.261–286, 2015
- Thapliyal, K. and Pathak, A., (2015), ”Applications of quantum cryptographic switch: various tasks related to controlled quantum communication can be performed using Bell states and permutation of particles”, *Quantum Information Processing*, Vol.14, No.7, pp.2599–2616, 2015
- Theer, P. and Denk, W., (2006), ”On the fundamental imaging-depth limit in two-photon microscopy”, *JOSA A*, Vol.23, No.12, pp.3139–3149, 2006
- Ting, G., Feng-Li, Y., and Zhi-Xi, W., (2005), ”A simultaneous quantum secure direct communication scheme between the central party and other M parties”, *Chinese Physics Letters*, Vol.22, No.10, pp.2473, 2005
- Tittel, W., Brendel, J., Zbinden, H., and Gisin, N., (2000), ”Quantum cryptography using entangled photons in energy-time Bell states”, *Physical Review Letters*, Vol.84, No.20, pp.4737, 2000
- Tomamichel, M., Lim, C. C. W., Gisin, N., and Renner, R., (2012), ”Tight finite-key analysis for quantum cryptography”, *Nature communications*, Vol.3,, pp.634, 2012
- Townsend, P., Phoenix, S., Blow, K., and Barnett, S., (1994), ”Design of quantum cryptography systems for passive optical networks”, *Electronics Letters*, Vol.30, No.22, pp.1875–1877, 1994
- Townsend, P. D., Rarity, J., and Tapster, P., (1993), ”Single photon interference in 10 km long optical fibre interferometer”, *Electronics Letters*, Vol.29, No.7, pp.634–635, 1993
- Toyoshima, M., Shoji, Y., Takayama, Y., Kunimori, H., Takeoka, M., Fujiwara, M., and Sasaki, M., (2009), ”Conceptual designs of onboard transceivers for ground-to-satellite

- quantum cryptography”, In *Atmospheric Propagation VI*, volume 7324, pp. 73240E, International Society for Optics and Photonics
- Toyoshima, M., Takayama, Y., Klaus, W., Kunimori, H., Fujiwara, M., and Sasaki, M., (2008a), ”Free-space quantum cryptography with quantum and telecom communication channels”, *Acta Astronautica*, Vol.63, No.1-4, pp.179–184, 2008
- Toyoshima, M., Takayama, Y., Kunimori, H., Takeoka, M., Fujiwara, M., and Sasaki, M., (2008b), ”Development of the polarization tracking scheme for free-space quantum cryptography”, In *Atmospheric Propagation V*, volume 6951, pp. 69510I, International Society for Optics and Photonics
- Turchette, Q., Myatt, C., King, B., Sackett, C., Kielpinski, D., Itano, W., Monroe, C., and Wineland, D., (2000a), ”Decoherence and decay of motional quantum states of a trapped atom coupled to engineered reservoirs”, *Physical Review A*, Vol.62, No.5, pp.053807, 2000
- Turchette, Q., Myatt, C., King, B., Sackett, C., Kielpinski, D., Itano, W., Monroe, C., and Wineland, D., (2000b), ”Decoherence and decay of motional quantum states of a trapped atom coupled to engineered reservoirs”, *Physical Review A*, Vol.62, No.5, pp.053807, 2000
- Tyson, R. K., (2002), ”Bit-error rate for free-space adaptive optics laser communications”, *JOSA A*, Vol.19, No.4, pp.753–758, 2002
- Ursin, R., Tiefenbacher, F., Schmitt-Manderbach, T., Weier, H., Scheidl, T., Lindenthal, M., Blauensteiner, B., Jennewein, T., Perdigues, J., Trojek, P., et al., (2007), ”Entanglement-based quantum communication over 144 km”, *Nature physics*, Vol.3, No.7, pp.481–486, 2007
- Vaidman, L., (1994), ”Teleportation of quantum states”, *Physical Review A*, Vol.49, No.2, pp.1473, 1994
- Van Loock, P. and Braunstein, S. L., (1999), ”Unconditional teleportation of continuous-variable entanglement”, *Physical Review A*, Vol.61, No.1, pp.010302, 1999
- Vasiliu, E. V., (2011), ”Non-coherent attack on the ping-pong protocol with completely entangled pairs of qutrits”, *Quantum Information Processing*, Vol.10, No.2, pp.189–202, 2011
- Vernam, G. S., (1926), ”Cipher printing telegraph systems: For secret wire and radio telegraphic communications”, *Journal of the AIEE*, Vol.45, No.2, pp.109–115, 1926
- Villoresi, P., Jennewein, T., Tamburini, F., Aspelmeyer, M., Bonato, C., Ursin, R., Pernechele, C., Luceri, V., Bianco, G., Zeilinger, A., et al., (2008), ”Experimental verification of the feasibility of a quantum channel between space and Earth”, *New Journal of Physics*, Vol.10, No.3, pp.033038, 2008
- Waks, E., Inoue, K., Santori, C., Fattal, D., Vuckovic, J., Solomon, G. S., and Yamamoto, Y., (2002a), ”Secure communication: Quantum cryptography with a photon turnstile”, *Nature*, Vol.420, No.6917, pp.762, 2002
- Waks, E., Zeevi, A., and Yamamoto, Y., (2002b), ”Security of quantum key distribution with entangled photons against individual attacks”, *Physical Review A*, Vol.65, No.5, pp.052310, 2002
- Wang, Arthur W,*Method and apparatus for providing wideband services using medium and low earth orbit satellites*, US Patent 7,627,284
- Wang, C., Deng, F.-G., Li, Y.-S., Liu, X.-S., and Long, G. L., (2005a), ”Quantum secure direct communication with high-dimension quantum superdense coding”, *Physical Review A*, Vol.71, No.4, pp.044305, 2005
- Wang, C., Deng, F. G., and Long, G. L., (2005b), ”Multi-step quantum secure direct communication using multi-particle Green–Horne–Zeilinger state”, *Optics communications*, Vol.253, No.1, pp.15–20, 2005
- Wang, D. and Ye, L., (2013a), ”Joint remote preparation of a class of four-qubit cluster-like states with tripartite entanglements and positive operator-valued measurements”, *Inter-*

- national Journal of Theoretical Physics*, Vol.52, No.9, pp.3075–3085, 2013
- Wang, D. and Ye, L., (2013b), "Multiparty-controlled joint remote state preparation", *Quantum information processing*, Vol.12, No.10, pp.3223–3237, 2013
- Wang, G., Shen, D., Chen, G., Pham, K., and Blasch, E., (2014), "Polarization tracking for quantum satellite communications", In *SPIE Defense + Security*, pp. 90850T–90850T, International Society for Optics and Photonics
- Wang, J.-Y., Yang, B., Liao, S.-K., Zhang, L., Shen, Q., Hu, X.-F., Wu, J.-C., Yang, S.-J., Jiang, H., Tang, Y.-L., et al., (2013), "Direct and full-scale experimental verifications towards ground–satellite quantum key distribution", *Nature Photonics*, Vol.7, No.5, pp.387, 2013
- Wang, Q., Chen, W., Xavier, G., Swillo, M., Zhang, T., Sauge, S., Tengner, M., Han, Z.-F., Guo, G.-C., and Karlsson, A., (2008), "Experimental decoy-state quantum key distribution with a sub-poissonian heralded single-photon source", *Physical review letters*, Vol.100, No.9, pp.090501, 2008
- Wang, W.-C., (1986), "Electromagnetic wave theory", *Google Scholar*, 1986
- Wang, X.-B., (2005), "Beating the photon-number-splitting attack in practical quantum cryptography", *Physical review letters*, Vol.94, No.23, pp.230503, 2005
- Wang, X.-W., Xia, L.-X., Wang, Z.-Y., and Zhang, D.-Y., (2010), "Hierarchical quantum-information splitting", *Optics Communications*, Vol.283, No.6, pp.1196–1199, 2010
- Wei, C.-Y., Cai, X.-Q., Liu, B., Wang, T., and Gao, F., (2017), "A generic construction of quantum-oblivious-key-transfer-based private query with ideal database security and zero failure", *IEEE Transactions on Computers*, 2017
- Wei, J., Dai, H.-Y., and Zhang, M., (2014), "Two efficient schemes for probabilistic remote state preparation and the combination of both schemes", *Quantum information processing*, Vol.13, No.9, pp.2115–2125, 2014
- Weihls, G., Jennewein, T., Simon, C., Zeilinger, A., and Weinfurter, H., "Quantum cryptography with entangled photons"
- Wieczorek, W., Krischek, R., Kiesel, N., Michelberger, P., Tóth, G., and Weinfurter, H., (2009), "Experimental entanglement of a six-photon symmetric Dicke state", *Physical review letters*, Vol.103, No.2, pp.020504, 2009
- Wójcik, A., (2003), "Eavesdropping on the ping-pong quantum communication protocol", *Physical Review Letters*, Vol.90, No.15, pp.157901, 2003
- Wootters, W. K. and Zurek, W. H., (1982), "A single quantum cannot be cloned", *Nature*, Vol.299, No.5886, pp.802–803, 1982
- Xiang, G.-Y., Li, J., Yu, B., and Guo, G.-C., (2005a), "Remote preparation of mixed states via noisy entanglement", *Physical Review A*, Vol.72, No.1, pp.012315, 2005
- Xiang, G.-Y., Li, J., Yu, B., and Guo, G.-C., (2005b), "Remote preparation of mixed states via noisy entanglement", *Physical Review A*, Vol.72, No.1, pp.012315, 2005
- Xin-Wei, Z., Hai-Yang, S., and Gang-Long, M., (2010), "Bidirectional swapping quantum controlled teleportation based on maximally entangled five-qubit state", *arXiv preprint arXiv:1006.0052*, 2010
- Xue, L., Li, Z., Zhang, L., Zhai, D., Li, Y., Zhang, S., Li, M., Kang, L., Chen, J., Wu, P., et al., (2016), "Satellite laser ranging using superconducting nanowire single-photon detectors at 1064 nm wavelength", *Optics letters*, Vol.41, No.16, pp.3848–3851, 2016
- Yan, A., (2013), "Bidirectional controlled teleportation via six-qubit cluster state", *International Journal of Theoretical Physics*, Vol.52, No.11, pp.3870–3873, 2013
- Yan, F. and Zhang, X., (2004), "A scheme for secure direct communication using EPR pairs and teleportation", *The European Physical Journal B-Condensed Matter and Complex Systems*, Vol.41, No.1, pp.75–78, 2004
- Yang, C.-W. and Hwang, T., (2013), "Quantum dialogue protocols immune to collective

- noise”, *Quantum information processing*, Vol.12, No.6, pp.2131–2142, 2013
- Ye, M.-Y., Zhang, Y.-S., and Guo, G.-C., (2004a), ”Faithful remote state preparation using finite classical bits and a nonmaximally entangled state”, *Physical Review A*, Vol.69, No.2, pp.022310, 2004
- Ye, M.-Y., Zhang, Y.-S., and Guo, G.-C., (2004b), ”Faithful remote state preparation using finite classical bits and a nonmaximally entangled state”, *Physical Review A*, Vol.69, No.2, pp.022310, 2004
- Yin, J., Cao, Y., Li, Y.-H., Liao, S.-K., Zhang, L., Ren, J.-G., Cai, W.-Q., Liu, W.-Y., Li, B., Dai, H., et al., (2017), ”Satellite-based entanglement distribution over 1200 kilometers”, *Science*, Vol.356, No.6343, pp.1140–1144, 2017
- Yuan, H., Song, J., Zhou, J., Zhang, G., and Wei, X.-f., (2011), ”High-capacity deterministic secure four-qubit W state protocol for quantum communication based on order rearrangement of particle pairs”, *International Journal of Theoretical Physics*, Vol.50, No.8, pp.2403–2409, 2011
- Yuan, Z., Sharpe, A., and Shields, A., (2007), ”Unconditionally secure one-way quantum key distribution using decoy pulses”, *Applied physics letters*, Vol.90, No.1, pp.011118, 2007
- Yuan, Z. and Shields, A., (2005), ”Continuous operation of a one-way quantum key distribution system over installed telecom fibre”, *Optics Express*, Vol.13, No.2, pp.660–665, 2005
- Zadok, A., Scheuer, J., Sendowski, J., and Yariv, A., (2008), ”Secure key generation using an ultra-long fiber laser: transient analysis and experiment”, *Optics express*, Vol.16, No.21, pp.16680–16690, 2008
- Zanardi, P. and Rasetti, M., (1997), ”Noiseless quantum codes”, *Physical Review Letters*, Vol.79, No.17, pp.3306, 1997
- Zawadzki, P., (2012a), ”Improving security of the ping-pong protocol”, *Quantum Information Processing*, Vol.12, No.1, pp.149–155, 2012
- Zawadzki, P., (2012b), ”The Ping-Pong protocol with a prior privacy amplification”, *International Journal of Quantum Information*, Vol.10, No.03, pp.1250032, 2012
- Zawadzki, P., (2012c), ”Security of ping-pong protocol based on pairs of completely entangled qudits”, *Quantum Information Processing*, pp.1–12, 2012
- Zawadzki, P., (2013), ”Improving security of the ping-pong protocol”, *Quantum Information Processing*, Vol.12, No.1, pp.149–155, 2013
- Zawadzki, P. and Miszczak, J. A., (2016), ”A General Scheme for Information Interception in the Ping-Pong Protocol”, *Advances in Mathematical Physics*, Vol.2016,, 2016
- Zbinden, H., Gisin, N., Huttner, B., Muller, A., and Tittel, W., (2000), ”Practical aspects of quantum cryptographic key distribution”, *Journal of Cryptology*, Vol.13, No.2, pp.207–220, 2000
- Zha, X.-W., Zou, Z.-C., Qi, J.-X., and Song, H.-Y., (2013), ”Bidirectional quantum controlled teleportation via five-qubit cluster state”, *International Journal of Theoretical Physics*, Vol.52, No.6, pp.1740–1744, 2013
- Zhan, Y.-B., Fu, H., Li, X.-W., and Ma, P.-C., (2013), ”Deterministic remote preparation of a four-qubit cluster-type entangled state”, *International Journal of Theoretical Physics*, Vol.52, No.8, pp.2615–2622, 2013
- Zhan, Y.-B. and Ma, P. C., (2013), ”Deterministic joint remote preparation of arbitrary two-and three-qubit entangled states”, *Quantum information processing*, Vol.12, No.2, pp.997–1009, 2013
- Zhang, Z., Man, Z., and Li, Y., (2004), ”Improving Wójcik’s eavesdropping attack on the ping-pong protocol”, *Physics Letters A*, Vol.333, No.1, pp.46–50, 2004
- Zhang, Z.-H., Shu, L., Mo, Z.-W., Zheng, J., Ma, S.-Y., and Luo, M.-X., (2014), ”Joint remote state preparation between multi-sender and multi-receiver”, *Quantum information*

- processing*, Vol.13, No.9, pp.1979–2005, 2014
- Zhang-Yin, W., Yi-Min, L., Xue-Qin, Z., and Zhan-Jun, Z., (2009), "Controlled remote state preparation", *Communications in Theoretical Physics*, Vol.52, No.2, pp.235, 2009
- Zhao, Y., Qi, B., Ma, X., Lo, H.-K., and Qian, L., (2006), "Experimental quantum key distribution with decoy states", *Physical review letters*, Vol.96, No.7, pp.070502, 2006
- Zhao, Z., Chen, Y.-A., Zhang, A.-N., Yang, T., Briegel, H., and Pan, J.-W., (2004), "Experimental demonstration of five-photon entanglement and open-destination teleportation", *arXiv preprint quant-ph/0402096*, 2004
- Zhong-Xiao, M. and Yun-Jie, X., (2007), "Improvement of security of three-party quantum secure direct communication based on GHZ states", *Chinese Physics Letters*, Vol.24, No.1, pp.15, 2007
- Zhong-Xiao, M., Zhan-Jun, Z., and Yong, L., (2005), "Deterministic secure direct communication by using swapping quantum entanglement and local unitary operations", *Chinese Physics Letters*, Vol.22, No.1, pp.18, 2005
- Zhou, N., Zeng, G., and Xiong, J., (2004), "Quantum key agreement protocol", *Electronics Letters*, Vol.40, No.18, pp.1149–1150, 2004
- Zhou, P., Li, H.-W., and Long, L.-R., (2013), "Probabilistic multiparty joint remote preparation of an arbitrary m-qubit state with a pure entangled channel against collective noise", *International Journal of Theoretical Physics*, Vol.52, No.3, pp.849–861, 2013
- Zhu, A.-D., Xia, Y., Fan, Q.-B., and Zhang, S., (2006), "Secure direct communication based on secret transmitting order of particles", *Physical Review A*, Vol.73, No.2, pp.022338, 2006