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(4-3) **M. Hayashi** eds. *Asymptotic Theory in Quantum Statistical Inference: Selected Papers* (World Scientific, 2005). These Selected Papers contain important results in Quantum Statistical Inference.

(4-4) H. Imai and **M. Hayashi** eds. *Quantum Computation and Information*, Springer (2006, May). This book contains the research activities of the ERATO Quantum Computation and Information Project Japan Science and Technology Agency (JST), which was at the time the largest project of quantum information and computation in Japan.

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(5-4) S. Song and **M. Hayashi**, "Equivalence of Non-Perfect Secret Sharing and Symmetric Private Information Retrieval with General Access Structure," *Proc. 2021 IEEE Int. Symp. Information Theory (ISIT)*, Melbourne, Victoria, Australia, 12–20 July 2021. (In Press)

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6 Refereed oral presentation without proceeding

(6-1) S. Song and **M. Hayashi**, "Capacity of Quantum Private Information Retrieval with Colluding Servers," *20th Asian Quantum Information Science Conference*, Sydney, Australia, 7 – 9 December 2020. (online event)

(6-2) G. Bai, Y.-D. Wu, Y. Zhu, **M. Hayashi**, and G. Chiribella, "Efficient Algorithms for Causal Order Discovery in Quantum Networks," *20th Asian Quantum Information Science Conference*, Sydney, Australia, 7 – 9 December 2020. (online event)

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(6-9) R. Takagi, K. Wang, and **M. Hayashi** "Application of the Resource Theory of Channels to Communication Scenarios," *Beyond IID in Information Theory 8*, Stanford University, USA, November 9 - 13, 2020 (online event on Zoom).

(6-10) H. Zhu and **M. Hayashi**, "Efficient Verification of Pure Quantum States in the Adversarial Scenario" *Quantum Information Processing 2020 (QIP)*, Shenzhen, China, January 6 – 10, 2020.

(6-11) S. Song and **M. Hayashi**, "Capacity of Quantum Private Information Retrieval with Multiple Servers" *19th Asian Quantum Information Science Conference*, Seoul, Korea, August 19 – 23, 2019.

(6-12) **M. Hayashi**, "Verification of Graph state, Hypergraph state, and Weighted graph state" *Beyond iid Conference*, University of Technology Sydney, Sydney, Australia, July 1–5, 2019.

(6-13) Z. Fan, Z. Yao, **M. Hayashi**, and W. Eddy, "Quantifying time-varying sources in magnetoencephalography: A discrete approach," *The 3rd International Conference on Econometrics and Statistics (EcoSta 2019)*, the National Chung Hsing University (NCHU), Taichung, Taiwan, June 25 – 27 ,2019.

(6-14) H. Zhu and **M. Hayashi**, "Universally Fisher-symmetric informationally complete measurements," *18th Asian Quantum Information Science Conference*, Nagoya, Japan, September 8 – 12, 2018.

(6-15) Y. Yang, G. Chiribella and **M. Hayashi**, "Attaining the ultimate precision limit in quantum state estimation," *18th Asian Quantum Information Science Conference*, Nagoya, Japan, September 8 – 12, 2018. (It was selected as a Plenary Contributed Talk.)

(6-16) Y. Yang, G. Bai, G. Chiribella, and **M. Hayashi**, "Compression for identically prepared qudit states," *Quantum Information Processsing (QIP 2018)*. QuTech at Delft University of Technology, Delft, The Netherlands, January 15 - 19, 2018.

(6-17) **M. Hayashi**, "Secure wireless communication under spatial and local Gaussian noise assumptions," *10th International Conference on Information Theoretic Security (ICITS2017) Workshop Track*, Hong Kong, China, November 29 – December 2, 2017.

(6-18) **M. Hayashi**, M. Owari, G. Kato, and N. Cai, " Secrecy and Robustness for Active Attack in Secure Network Coding and its Application to Network Quantum Key Distribution," *10th International Conference on Information Theoretic Security (ICITS2017) Workshop Track*, Hong Kong, China, November 29 – December 2, 2017.

(6-19) A. Vazquez-Castro and **M. Hayashi**, "Information-theoretic Physical Layer Security for Satellite Channels," *10th International Conference on Information Theoretic Security (ICITS2017) Workshop Track*, Hong Kong, China, November 29 – December 2, 2017.

(6-20) K. Ito and **M. Hayashi**, "Optimal performance of generalized heat engines with finite-size baths of multiple conserved quantities beyond i.i.d. scaling," *14th Granada Seminar on Quantum Systems in and out of Equilibrium: Fundamentals, dynamics and applications,* Facultad de Ciencias, Universidad de Granada, Granada, Spain, 20-23 June, 2017.

(6-21) K. Fujii and **M. Hayashi**, "Verifiable fault-tolerance in measurement-based quantum computation," *Asian Conference on Quantum Information Science (AQIS 17)*, National University of Singapore, Singapore, September 4 - 8, 2017.

(6-22) Y. Yang, G. Bai, G. Chiribella, and **M. Hayashi**, "Compression for Quantum Population Coding," *Asian Conference on Quantum Information Science (AQIS 17)*, National University of Singapore, Singapore, September 4 - 8, 2017.

(6-23) Y. Yang, G. Chiribella, and **M. Hayashi**, "Optimal compression for identically prepared qubit states," *The 20th workshop on Quantum Information Processing (QIP 2017)*, Washington, Seattle, USA, 16-20, January, 2017.

(6-24) K. Ito, W. Kumagai, and **M. Hayashi**, "Asymptotic Entanglement Preservability of LOCC Conversions," *14th Asian Quantum Information Science Conference (AQIS2014),* Shirankaikan, Kyoto, Japan, August 20–24, 2014.

(6-25) **M. Hayashi** and S. Watanabe "Non-Asymptotic Analysis of Privacy Amplification for Markov Chains," *The 7th International Conference on Information Theoretic Security (ICITS 2013) Workshop Track*, Singapore, November, 28–30, 2013.

(6-26) W. Kumagai, **M. Hayashi**, "Quantum hypothesis testing for quantum Gaussian states," *Bernoulli Society Satellite Meeting to the ISI World Statistics Congress 2013*, The University of Tokyo, Tokyo, Japan, September 2–4, 2013.

(6-27) M. Tomamichel and **M. Hayashi**, "A hierarchy of information quantities for the finite block length analysis of quantum tasks," *The 15th workshop on Quantum Information Processing (QIP 2013)*, Beijing, China, 21–25, January, 2013. (Available online: http://arxiv.org/abs/1208.1478).

(6-28) W. Kumagai and **M. Hayashi**, "Irreversibility of entanglement concentration for pure state" *The* 12^{th} *Asian Conference on Quantum Information Science (AQIS 2012)*, Suzhou, China, 23–26, August, 2012. (Available online: http://arxiv.org/abs/1205.4370).

(6-29) M. Owari and **M. Hayashi**, "Asymptotic local hypothesis testing between a pure bipartite state and the completely mixed state," *The 2nd Institute of Mathematical Statistics Asia Pacific Rim Meeting*, Epochal Tsukuba, Tsukuba, Japan, 2–4, July, 2012. (Available online: http://arxiv.org/abs/1105.3789).

(6-30) W. Kumagai and **M. Hayashi**, "Quantum hypothesis testing for quantum Gaussian states," *The 2nd Institute of Mathematical Statistics Asia Pacific Rim Meeting*, Epochal Tsukuba, Tsukuba, Japan, 2–4, July, 2012.

(6-31) L. Chen and **M. Hayashi**, "Classifying tripartite pure states in quantum information science and tensor rank," *The 2nd Institute of Mathematical Statistics Asia Pacific Rim Meeting*, Epochal Tsukuba, Tsukuba, Japan, 2–4, July, 2012.

(6-32) T. Tsurumaru and **M. Hayashi**, "Dual universality of hash functions and its applications to classical and quantum cryptography" *QCRYPT 2011: First Annual Conference on Quantum Cryptography*, Zürich, Switzerland 12–16, September, 2011.

(6-33) **M. Hayashi**, "Theoretical analysis and implementation on QKD with the decoy-state method," *Theory and Realisation of Practical Quantum Key Distribution*, University of Waterloo, June 11 – 14, 2007

(6-34) F. Buscemi, **M. Hayashi**, and M. Horodecki, "A general entropic approach to the information-disturbance tradeoff problem in quantum measurements," *Third Asia Pacific Conference on Quantum Information Science*, Nanyang Executive Center, Singapore, 30 July – 2 August, (2007).

(6-35) **M. Hayashi**, D. Markham, M. Murao, M. Owari, and S. Virmani, "Entanglement and group symmetries: stabilizer, symmetric and anti-symmetric states," *Asian Conference on Quantum Information Science (AQIS 07)*, Shiran Kaikan, Kyoto University, Japan, September 3 - 6, (2007), p. 24–25.

(6-36) **M. Hayashi**, "Prior entanglement between senders enables perfect quantum network coding," *Asian Conference on Quantum Information Science (AQIS 07)*, Shiran Kaikan, Kyoto University, Japan, September 3 – 6, (2007), p.38–39.

(6-37) F. Buscemi, **M. Hayashi**, and M. Horodecki, "A general entropic approach to the information-disturbance tradeoff problem in quantum measurements," *Asian Conference on Quantum Information Science (AQIS 07)*, Shiran Kaikan, Kyoto University, Japan September 3 – 6, (2007), p.40–41

(6-38) **M. Hayashi**, "General theory for decoy-state QKD with arbitrary number of intensities," *Asian Conference on Quantum Information Science (AQIS 07)*, Shiran Kaikan, Kyoto University, Japan September 3 – 6, (2007), p.75–76

(6-39) J. Hasegawa, **M. Hayashi**, T. Hiroshima, and A. Tomita, "Security analysis and experiment of decoy state quantum key distribution incorporating finite statistics," *Asian Conference on Quantum Information Science*

(AQIS 07), Shiran Kaikan, Kyoto University, Japan September 3 – 6, (2007), p.77–78

(6-40) F. Buscemi, **M. Hayashi**, and M. Horodecki, "INFORMATION EXTRACTION VERSUS IRREVERSIBILITY IN QUANTUM MEASUREMENT PROCESSES," *Noise Information & Complexity Quantum Scale*, Ettore Majorana Centre, Erice (Sicily), Italy, 4th – 10th November (2007).

(6-41) **M. Hayashi**, K. Iwama, H. Nishimura, R. Raymond, and S. Yamashita, "Quantum Network Coding," *QIP 2006 - The 9th Workshop on Quantum Information Processing (QIP 06)*, Paris, January 16 – 20, (2006).

(6-42) **M. Hayashi**, "Practical Evaluation of Security for Quantum Key Distribution," *Asian conference on Quantum Information Science 2006 (AQIS 06)*, BeiJing Friendship Hotel, BeiJing, China, September 1–4, (2006), p. 9–10.

(6-43) M. Owari and **M. Hayashi**, "The relationship between local copying and local discrimination," *ERATO conference on Quantum Information Science 2005 (EQIS 05)*, JST, Tokyo, August 26–30, (2005), pp. 31–32.

(6-44) D. Markham, S. Virmani, M. Owari, M. Murao, **M. Hayashi**, "Local Discrimination and multipartite entanglement measures," *ERATO conference on Quantum Information Science 2005 (EQIS 05)*, JST, Tokyo, August 26–30, (2005), pp. 91–92.

(6-45) T. Tsuda, B.S. Shi, A. Tomita, **M. Hayashi**, K. Matsumoto, and Y.K. Jiang, "Hypothesis testing for an entangled state produced by spontaneous parametric down conversion," *ERATO conference on Quantum Information Science 2005 (EQIS 05)*, JST, Tokyo, August 26–30, (2005), pp. 57–58.

(6-46) T. Hiroshima and **M. Hayashi**, "Finding a maximally correlated state – Simultaneous Schmidt decomposition of bipartite pure states," *ERATO conference on Quantum Information Science 2004 (EQIS 04)*, Tokyo, September 1–5, (2004), pp. 43–44.

(6-47) **M. Hayashi**, H. Imai, K. Matsumoto, M. B. Ruskai and T. Shimono, "Qubit channels which require four inputs to achieve capacity: Implications for additivity conjectures," *ERATO conference on Quantum Information Science 2004 (EQIS 04)*, Tokyo, September 1–5, (2004), pp. 45–46.

(6-48) **M. Hayashi**, "Estimation of SU(2) action by using entanglement," *ERATO conference on Quantum Information Science 2004 (EQIS 04)*, Tokyo, September 1–5, (2004), pp. 68–69.

(6-49) Y. Tsuda, **M. Hayashi** and K. Matsumoto, "Hypothesis testing for entanglement," *ERATO conference on Quantum Information Science 2004 (EQIS 04)*, Tokyo, September 1–5, (2004), pp. 70–71.

(6-50) **M. Hayashi** and K. Matsumoto, "Quantum universal variable-length source coding," *ERATO Workshop on Quantum Information Science 2002 (EQIS 02)*, Tokyo, September 5-8, (2002), pp. 31–32.

(6-51) F. Morikoshi, **M. Hayashi**, M. Koashi, K. Matsumoto, and A. Winter, "Error exponents for entanglement concentration," *ERATO Workshop on Quantum Information Science 2002 (EQIS 02)*, Tokyo, September 5-8, (2002), pp.46-47.

(6-52) **M. Hayashi**, "Optimal sequence of POVMs in the sense of Stein's lemma in quantum hypothesis testing," *ERATO workshop on Quantum Information Science 2001 (EQIS 01)*, Tokyo, September 6-8, (2001), p.20.

7 Invited talks

(7-1) **M. Hayashi**, "Information-Theoretic Anonymous Cryptographic Protocols (Plenary Talk)," *ISITA2020 - The International Symposium on Information Theory and Its Applications*, Kapolei, Hawai'i, USA, October 24 – 27, 2020 (Online).

(7-2) **M. Hayashi**, "Quantum Information Processing over Quantum Network (Plenary Talk)," *SPCOM 2020 - International Conference on Signal Processing and Communications*, Indian Institute of Science, Bangalore, India, July 19-24, 2020 (Online).

(7-3) **M. Hayashi**, "Overview about previous finite size results," *QKD Security Proof Workshop 2020*, University of Waterloo & University of Toronto, Canada, July 15-17, 2020 (Online).

(7-4) **M. Hayashi**, "Quantum Private Information Retrieval with Multiple Servers," *The 2019 Workshop on Probability and Information Theory (WPI 2019)* The University of Hong Kong, August 19-22, 2019.

(7-5) **M. Hayashi**, "Verification of commuting quantum computations via fidelity estimation of weighted graph states," *Mini-Workshop on Quantum Verification*, Fudan University, Shanghai, China, August 16-18, 2019.

(7-6) **M. Hayashi**, "Secure Quantum Network Code without Classical Communication," *Summer Workshop on Quantum Algorithm and Quantum Software* Peng Cheng Laboratory, Shenzhen, China, August 12 - 16, 2019.

(7-7) **M. Hayashi**, "Verification of commuting quantum computations via fidelity estimation of weighted graph states," *Quantum information and string theory 2019* Yukawa Institute for Theoretical Physics (YITP), Kyoto University, Kyoto, Japan, May 27-June 28, 2019.

(7-8) **M. Hayashi**, "Perfect Discrimination of Non-Orthogonal Separable Pure States on Bipartite System in General Probabilistic Theory" *Interactions between Noncommutative Analysis and Quantum Information Theory* Institute for Advanced Study in Mathematics, Harbin Institute of Technology, June 1-5, 2019.

(7-9) **M. Hayashi**, "Asymptotic decoupling property and mixing condition and Hidden Markovian Process in quantum system," *Mathematical Aspects in Current Quantum Information Theory 2019 (MAQIT 2019)*, Seoul National University, Seoul, Korea, May 20-24, 2019.

(7-10) **M. Hayashi**, "Finite-length security analysis in quantum key distribution," *2019 Annual meeting for quantum information of the Chinese Institute of Electronics*, Jinan, China, May 11-12, 2019.

(7-11) **M. Hayashi**, "Measurement-Based Quantum Computation and Its Verification," *Second Hong Kong-Shenzhen Workshop on Quantum Information Science*, Southern University of Science and Technology, Shenzhen, China, November 26 - 29 2018.

(7-12) **M. Hayashi**, "Secure physical layer network coding versus secure network coding," *2018 IEEE Information Theory Workshop*, Guangzhou, China, November 25 – 29, 2018.

(7-13) **M. Hayashi**, "Quantum stopwatch: How to store time in a quantum memory," *Wolfson - SUSTech meeting*, Wolfson College, Oxford, UK, November, 6 – 8, 2018.

(7-14) **M. Hayashi**, "Verification of Measurement-Based Quantum Computation," *AQIS2018 Kyoto satellite workshop on quantum computing*, Panasonic Auditorium, Yukawa Hall, Yukawa Institute for Theoretical Physics, Kyoto University, Kyoto, Japan September 13, 2018.

(7-15) **M. Hayashi**, "Attaining the ultimate precision limit in quantum state estimation," *International Workshop on Quantum Tomography (IWQT)*, Fudan University, Shanghai, China, July 30 - August 3, 2018.

(7-16) **M. Hayashi**, "Attaining the ultimate precision limit in quantum state estimation," *Hong Kong-Shenzhen Workshop on Quantum Information Science*, Southern University of Science and Technology, Shenzhen, China, May 21-24 2018.

(7-17) **M. Hayashi**, "Secure wireless communication and its application to satellite communication," Japan-Singapore Workshop on Coding and Information Theory, School of Physical & Mathematical Sciences, Nanyang Technological University, Singapore, March 4-7, 2018.

(7-18) **M. Hayashi**, "Asymptotic decoupling property and mixing condition and Hidden Markovian Process in quantum system," Hong Kong Workshop on Quantum Information Foundations: Focus on Physics of the Observer, Department of Computer Science, University of Hong Kong, Hong Kong, January 8-11, 2018.

(7-19) **M. Hayashi**, "Verification of Measurement-Based Quantum Computation," *IHP conference on Quantum Information Theory.*, Institut Henri Poincaré, Paris, France, December 11- 15, 2017.

(7-20) **M. Hayashi**, "Verification of Measurement-Based Quantum Computation," *International Workshop on Quantum Computing and Quantum Information Processing 2017*, Academy of Mathematics and Systems Science, Beijing, China, November 12 - 14, 2017.

(7-21) **M. Hayashi**, "Asymptotic Analysis for Hidden Markovian Process with Quantum Hidden System," *2017 IEEE Information Theory Workshop*, Kaohsiung, Taiwan, November 6 - 10, 2017.

(7-22) **M. Hayashi**, "Role of Hypothesis Testing in Quantum Information Theory," *Asian Conference on Quantum Information Science (AQIS 17)*, National University of Singapore, Singapore, September 4 - 8, 2017.

(7-23) **M. Hayashi**, "Verification of Measurement-Based Quantum Computation," *Trustworthy Quantum Information*, Université Pierre et Marie Curie, Paris, France, June 19 - 21, 2017.

(7-24) **M. Hayashi**, "Secure wireless communication under spatial and local Gaussian noise assumptions," *2016 Shannon Workshop*, Shanghai Jiao Tong University, Shanghai, December 14-16, 2016.

(7-25) **M. Hayashi**, "Implementable quadratic enhancement in quantum metrology," Hong Kong Workshop on Quantum Information and Foundations, Hong Kong, May 4-7, 2016.

(7-26) **M. Hayashi**, "Shannon Theoretic Analysis for Classical and Quantum Information Security," *Nexus of Information and Computation Theories, Secrecy and Privacy Theme*, Institut Henri Poincaré, Paris, France, March 21 - April 1, 2016.

(7-27) **M. Hayashi**, "Measurement-based Formulation of Quantum Heat Engine and Optimal Efficiency with Finite-Size Effect," *Beyond I.I.D. in Information theory*, Banff, Canada, July 5-10, 2015.

(7-28) **M. Hayashi**, "Classical and Quantum Information Theoretical Analysis for Security," *Mathematical Tools of Information-Theoretic Security Workshop*, Paris, France, September 23-25, 2015.

(7-29) **M. Hayashi**, "Information Geometry Approach to Estimation and Hypothesis Testing for Markov Chains," A Symposium on the History of Functional Analysis, Xi'an, China, May 8-11, 2015.

(7-30) **M. Hayashi**, "Tight asymptotic bounds on local hypothesis testing between a pure bipartite state and the white noise state," *Workshop on Quantum Metrology, Interaction, and Causal Structure*, Beijing, China, December 1–5, 2014.

(7-31) **M. Hayashi**, "Generalized entropies and quantum security," *AJW2014 Australia-Japan Workshop on Mutiuser Quantum Networks 2014*, University of Technology, Sydney, Sydney, Australia, October, 22 - 24, 2014

(7-32) **M. Hayashi**, "Finite-length analysis for secret random number generation and coding theorems," (in Organized Session: Classical and Quantum Secure Network) *2014 International Symposium on Information Theory and Its Applications (ISITA 2014)*, Melbourne, Australia, 26 - 29, October 2014.

(7-33) **M. Hayashi** and S. Watanabe, "Non-asymptotic and asymptotic analyses on Markov chains in several problems," *2014 Information Theory and Applications Workshop*, Catamaran Resort, San Diego (USA), February 9-14, 2014.

(7-34) **M. Hayashi**, "Estimation of group action with energy constraint and its application to uncertainty relations on S^1 and S^3," *Nagoya Winter Workshop on Quantum Information, Measurement, and Foundations*, Nagoya University, March 3-7, 2014.

(7-35) **M. Hayashi**, "Asymptotic conversion of probability distribution and entangled state," *Beyond I.I.D.*, National University of Singapore, May 19-21, 2014.

(7-36) **M. Hayashi**, "Generalized entropies," *New Frontiers of Quantum Information Theory*, Palazzo dei Capitani del Popolo, Ascoli Piceno (Italy), July, 7-11, 2014.

(7-37) **M. Hayashi**, "Estimation of group action under the energy constraint," *Workshop on Quantum Metrology, Interaction, and Causal Structure*, Beijing, China, December 9–13, 2013.

(7-38) T. Tsurumaru and **M. Hayashi**, "Dual universality of hash functions and its applications to quantum cryptography," *Third International Quantum Science Symposium Asia-2013 on 'Quantum Information to Communications & Quantum Systems to Spintronics, Semi-conductors',* Tokyo, Japan, November 25 – 26, 2013.

(7-39) **M. Hayashi**, "Large deviation type evaluation in information theoretic security," *Workshop on Beyond i.i.d. in information theory*, Cambridge, UK, January, 8–11, 2013.

(7-40) **M. Hayashi**, "Large deviation type evaluation in information theoretic security," *Japan-Singapore Workshop on Multi-user Quantum Networks*, Centre for Quantum Technologies, National University of Singapore, Singapore, September, 17–20, 2012.

(7-41) **M. Hayashi**, "Security bound with privacy amplification in quantum system," *The International Symposium on Quantum Information and Quantum Logic*, Zhejiang University, Hangzhou, China, August, 10–13, 2012.

(7-42) **M. Hayashi**, "Weaker entanglement guarantees stronger entanglement," *5th Asia-Pacific Workshop on Quantum Information Science (5th APWQIS)*, Nanyang Technological University, Singapore, May, 25–28, 2011.

(7-43) **M. Hayashi**, "Phase estimation with photon number constraint," *2nd International Conference on Quantum Information and Technology*, National Institute of Informatics, Tokyo, Japan, October, 21–22, 2010.

(7-44) **M. Hayashi**, "Quantum statistical state estimation and quantum Cramer-Rao bound," *IISA-ISPS 2010 International Conference on Statistics, Probability, Operations Research, Computer Science and Allied Areas*, Department of Statistics, Andhra University, Visakhapatnam, India, 4–7, January, 2010. (This is one conference to celebrate the 90th birthday of Professor C. R. Rao, who is the most influential leading researcher in Statistics.)

(7-45) **M. Hayashi**, "Quantum statistical state estimation and quantum Cramer-Rao bound," *International Conference on Frontiers of Interface between Statistics and Sciences*, Hyderabad, India, 30 December 2009–2 January 2010. (This is the other conference to celebrate the 90th birthday of Professor C. R. Rao, who is the most influential leading researcher in Statistics.)

(7-46) **M. Hayashi**, "Quantum universal coding protocols and universal approximation of multi-copy states," *International Conference on Quantum Information and Technology*, National Institute of Informatics, Tokyo, Japan, 2–5, December, 2009.

(7-47) **M. Hayashi**, "Quantum key distribution I & II," *EQuaLS3, Expository Quantum Lecture Series 3*, Institute for Mathematical Research and Physics Department, Faculty of Science, University Putra Malaysia, Malaysia, 9–13, November, 2009.

(7-48) **M. Hayashi**, "Quantum universal coding protocols and universal approximation of multi-copy states," *OCPA6 The 6th Joint Meeting of Chinese Physicists Worldwide International Conference on Physics Education and Frontier Physics*, Lanzhou, China, August, 3–7, 2009.

(7-49) **M. Hayashi**, "Quantum capacity and degraded channel," *Multicritical Behaviour of Spin Glasses and Quantum Error Correcting Codes (MBQEC)*, Centennial Hall, Ookayama campus, Tokyo Institute of Technology, Tokyo, Japan, November, 17–19, 2008.

(7-50) **M. Hayashi**, "Universal information protocols in quantum information theory," *Information and Communication*, Alfred Rényi Institute of Mathematics, Hungary, August, 25–28, 2008. (This is the conference to celebrate the 70th birthday of Professor Imré Csiszár, who is a leading researcher in Information Theory.)

(7-51) **M. Hayashi**, "Theoretical analysis and implementation on QKD with the decoy-state method," *KIAS-KAIST 2007 Workshop on Quantum Information Science*, KIAS, Seoul, Korea, June, 26–27 (2007).

(7-52) **M. Hayashi**, "Theoretical analysis and implementation on QKD with the decoy-state method," *Third Asia Pacific Conference on Quantum Information Science*, Nanyang Executive Center, Singapore, 30 July – 2 August, 2007.

(7-53) **M. Hayashi**, "State Discrimination of Entangled State by Local Operations," *Noise Information & Complexity Quantum Scale*, Ettore Majorana Centre, Erice (Sicily), Italy, November, 4 – 10, 2007.

(7-54) **M. Hayashi**, K. Matsumto, A. Tomita, B.-S. Shi, Y. Tsuda, and Y.K. Jiang: "Testing for Maximally Entangled State (Theory and Experiment)," *15th International Laser Physiscs workshop (LPHYS'06)*, EPFL, Lausanne, Switzerland, July, 24 – 28, 2006.

(7-55) **M. Hayashi**: "Practical Evaluation of Security for Quantum Key Distribution," *A conference on Quantum Statistics, Information and Control*, Nottingham, UK, July, 15 – 22, 2006.

(7-56) **M. Hayashi**, "Statistical analysis on testing of an entangled state based on Poisson distribution framework," *FOCUS MEETING: QUANTUM PROCESS ESTIMATION*, Budmerice, Slovakia, September 27–30, 2006.

(7-57) **M. Hayashi**: "Estimation of squeezed state," *9th International Conference on Squeezed States and Uncertainty Relations (ICSSUR 2005)*, Besancon, France, May 2 – 6, 2005.

(7-58) **M. Hayashi**: "Characterization of several kinds of quantum analogues of relative entropy," *2nd International Symposium on Information Geometry and its Applications*, University of Tokyo, Tokyo, December 12 – 16, 2005.

(7-59) **M. Hayashi**: "Quantum statistical inference and entanglement," *Special Week on Quantum Statistics*, Isaac Newton Institute for Mathematical Sciences, Cambridge, UK, October, 2004.

(7-60) **M. Hayashi**: "Hypothesis Testing Approach to Quantum Information Theory," *1st Asia-Pacific Conference on Quantum Information Science*, National Cheng Kung University, Tainan, Taiwan, December 10–13, 2004.

(7-61) **M. Hayashi**: "Quantum central limit theorem and quantum estimation," *Joint MaPhySto and QUANTOP Workshop on Quantum Measurements and Quantum Stochastics*, Department of Mathematical Sciences, University of Aarhus, Denmark, August 7 – 12, 2003.

(7-62) **M. Hayashi**: "Can quantum non-locality improve quantum estimation?" *Non-locality of Quantum Mechanics and Statistical Inference*, Kyoto, Japan, September, 8 – 9, 2003.

(7-63) **M. Hayashi**: "Hypothesis testing approach to quantum information theory," *COE Symposium on Quantum Information Theory*, Kyoto, Japan, September 2–3, 2003.