Lectures of Dénes Petz (2001–2011)

In 2001:

1. *Covariance and Fisher information in quantum mechanics*:
   CIRM-Volterra "Quantum probability Workshop". Levico, January 20-25.

2. *Capacity of quantum channels I, II, III, IV*:
   Volterra-CIRM International School "Quantum computer and quantum information", Trento, June.

3. *Quantum source coding*:
   "Quantum Entropies: Dynamics and Information" Trieste, December 12-14.

4. *Entropy and two examples of quantum Markov chains*:
   CIRM-Volterra International School "Quantum Markov chains and their applications in physics and quantum information". Levico, December 14-20.

In 2002:

1. *Quantum source coding and state compression*:
   Dublin, March.

2. *Covariance and Fisher information in quantum mechanics*:
   Information geometry and its applications, Pescara, July 1-5, 2002

3. *Perturbation of Wigner matrices and a conjecture*:
   London, December.

In 2003:

1. *Perturbation of Wigner matrices and a conjecture*:
   MaPhySto conference, January.

2. *On subadditivity of quantum entropy*:
   Eurandom, Eindhoven, May.

3. *On subadditivity of quantum entropy*
   Mathematical Physics Days, Leuven, June.

4. *Sufficiency of quantum coarse-grainings*:
   ZiF, Bielefeld, July.

5. *Subadditivity of quantum entropy and relation to quantum Markov states*:
   Quantum Levy Processes, Levico, October.

6. *Saturation of an entropy bound an quantum Markov states*:
   ICQI03 IIAS, Kyoto, November.

7. *Eigenvalue density of large random unitaries and their truncation*:
   Japan, November.

8. *Monotonicity of quantum relative entropy revisited*:
   Tohoku University, Sendai, Japan, November.

9. *The scientific heritage of John von Neumann*:
   Tokyo Science University, Japan, November.

In 2004:

1. *From the Monotonicity of Quantum Relative Entropy to SSA and Sufficiency*:
   Quantum Information Geometry, McMaster University, Hamilton, Canada, May.

2. *Free transportation cost inequalities via random matrix approximation:*
   Random Matrices and Probability, Warwick, UK, May.

3. *From the Monotonicity of Quantum Relative Entropy to SSA and Sufficiency*:
   Nottingham University, UK, May.

5. *From the Monotonicity of Quantum Relative Entropy to SSA and Sufficient Coarse-grainings*:
   Entanglement, Information & Noise, Krzyzowa, Poland, June.

6. *Some transportation cost inequalities. An application of large deviation results for random matrices*:
   25th QP Conference on Quantum Probability and Related Topics, Bedlevo, Poland, June.

7. *Equality conditions for strong subadditivity of the von Neumann entropy*:
   School of Physics, University of Quinsland, Brisbane, August.

8. *Free analogue of transportation cost inequalities*:
   "Free probability theory", October 9 - 14, Banff

9. *Truncated random unitary matrices*:
   3rd Sendai Workshop "Free Probability and Random Matrices", Japan, October

10. *Perturbed Wigner matrices and a conjecture*:
    3rd Sendai Workshop "Free Probability and Random Matrices", Japan, October

11. *Sufficient statistical inference in quantum mechanics*:
    Quantum Statistics - Quantum Measurements, Estimation and Related Topics, 15 - 19 November, Cambridge.

12. *Large deviation results for the eigenvalue density of some random matrices and applications*
    University of Munich, November.

In 2005:

1. *Introduction to random matrices and proofs of the Wigner theorem*:
   Mexiko, Iztapalapa, January.

2. *The scientific heritage of John von Neumann*:
   Mexiko, Iztapalapa, January.

3. *Relative entropy in quantum information theory*:
   Mexiko, Iztapalapa, January.

4. *An application of random matrix methods: The free analogue of the transportation cost inequality*:
   Mexiko, Iztapalapa, January.

5. *Sufficiency in quantum statistical inference*:
   Information Theory Seminar, Rényi Institute, April.

6. *Means of positive operators and matrices*:
   Riesz-Fejér Conference, Eger, June.

7. *Large deviation results for random matrices*:
   TU Braunschweig, July.

8. *Large deviations for functions of two random projections*:
   Workshop on non-commutative harmonic analysis, Bedlevo, August

9. *Large deviations*:
   Mathematical Physics Days, Leuven, September

10. *Sufficiency in quantum statistical inference*:
    Workshop on Random Matrices and Free Probability, Sendai, October

11. *Large deviations*:
    RIMS, Kyoto, October

12. *Means of positive matrices*:
    Osaka University, October

13. *Information geometry and quantum statistical inference*:
    IGAIA2, Tokyo,December

14. *Entropy, information geometry and quantum statistical inference*:
    Schrödinger Institute, Vienna, December.

In 2006:

1. *Large Deviations*:
   The Centre for Mathematical Physics, The University of Queensland, 23 March, 2006.

2. *On Sufficient Coarse-Grainings*:
   XXXVIII Symposium on Mathematical Physics, *Quantum Entanglement & Geometry*, Torun, June 4-7, 2006.

3. A course on *Algebraic methods for Quantum Mechanics*:
   School on Theory and Technology in Quantum Information, Communication, Computation and Cryptography, June, 2006, Trieste

4. *Relative Entropy in Quantum Information Theory*:
   Quantum Information Workshop, Pécs, 12-15 July 2006.

5. *State Tomography for Quantum Systems*:
   QUANTUM PROBABILITY, INFORMATION AND CONTROL, Nottingham 15-22 July, 2006.

6. *Complementarity in quantum systems*:
   colloquium lecture, Tohoku University, Sendai, August, 2006.

7. *Qubit tomography*:
   DMV Minisymposium: Mathematische Physik und Informationstheorie, Bonn, September, 2006.

8. *State estimation for qubits*:
   FOCUS MEETING: QUANTUM PROCESS ESTIMATION, 27th September - 1st October 2006, Budmerice, Slovakia.

9. *State estimation and conpmlementarity*:
   Workshop on Quantum Statistics, Erwin Schrödinger Institute on Mathematical Physics, Vienna, December, 2006.

10. *Noncommutative probability*:
    Noncommutative Day, Imperial College, London, December, 2006.

In 2007:

1. *Quantum state estimation*:
   Perspectives in theory and technology of quantum information and communication, March 5 to 9th, 2007, Marseille.

2. *Quantum state tomography and complementarity* :
   Institute of Statistical Mathematics, Tokyo, Japan, March, 2007.

3. *Complementarity of Quantum Systems*:
   Quantum Theory: Reconsiderations and Foundations 4, Vaxjö, June, 2007.

4. *John von Neumann and the quantum bits*:
   Frontiers of Knowledge in the XXI Century, Sciences in Dialogue in the New Europe, Trieste, June, 2007.

5. *An overview on quantum entropy*:
   Institute of Mathematics of Wroclaw University, August, 2007.

6. *Complementarity in quantum theory. An algebraic approach*:
   28th Conference on Quantum Probability and Related Topics, CIMAT-Guanajuato, MEXICO, 2-8 September 2007.

7. *Complementary subalgebras*:
   Miniworkshop on Ergodic Theory and von Neumann algebras, Erwin Schrödinger Institute, Vienna, December, 2007.

In 2008:

1. *Quantum tomography and complementarity*:
   TU Berlin, March, 2008

2. *From f-divergence to quantum quasi-entropy*:
   Geometric Aspects of Conditional Independence and Information, Leipzig, March, 2008

3. *Introduction to Quantum Information Quantities. Lecture 1. Shannon's approach to relative entropy and source coding. Lecture 2. Hypothesis testing and relative entropy. Lecture 3. The strong subadditivity of von Neumann entropy*: School on Quantum Statistical Physics and Quantum Information Theory, University of Cergy-Pontoise, April, 2008.

4. *From quasi-entropy to skew information*:
   Mathematical explorations in contemporary Statistics, Sestri Levante, May 19-20, 2008.

5. *Introduction to quantum information theory*:
   (intensive course), Tohoku Unibersity, July, 2008.

6. *From f-divergence to quasi-entropy*:
   KIAS, Seoul, July, 2008

7. *Riemannian geometry of positive definite matrices: Matrix means and quantum Fisher information*:
   Non-Euckidean Geometry and its Applications, Debrecen, August 22, 2008

8. *From f-divergence to quantum quasi-entropy*:
   Information and Communication, Budapest, August, 2008.

9. *From f-divergence to quantum quasi-entropy*:
   Mini-Workshop, Sendai, September, 2008.

10. *Complementarity and the algebraic structure of finite quantum systems*:
    International Workshop on Statistical-Mechanical Informatics, Sendai, September, 2008.

In 2009:

1. *Gaussian Markov triplets*:
   QBIC-9, 11-14 March, Noda Campus of Tokyo University of Science, 2009

2. *Problems related to complementarity*:
   Summer School and Advanced Workshop on Trends and Developments in Linear Algebra, June 22 - July 10, 2009, Trieste, Italy

3. *Complementary subalgebras*:
   Sendai, September

4. *Shannon's approach to entropy and source coding, Hypothesis testing and relative entropy, The strong subadditivity of the von Neumann entropy*:
   , V4 SUMMER SCHOOL IN QUANTUM INFORMATION, 21-27 September 2009, Budmerice, Slovakia

5. *Algebraic complementarity in quantum theory*:
   30th Conference on Quantum Probability, November 23-28, 2009, Santiago, Chile. (session organizer)

In 2010:

1. *The Golden-Thompson-Lieb inequality*:
   Tohoku University, Sendai, in January.

2. *Strongly subadditive functions*:
   Ochanomizu University, Tokyo, in February. (invited speaker)

3. *Algebraic complementarity in quantum theory*:
   Leuven Mathematical Physics Days, 6-7 May, 2010, Belgium. (invited speaker)

4. *From Markov triplets to strongly subadditive functions*:
   Von Neumann Workshop, 21 May, 2010, Budapest. (organizer)

5. *Overview of quantum Fisher information*:
   42 Symposium on Mathematical Physics, Quantum Channels, Quantum Information, Torun, June 19-22, 2010.(invited speaker)

6. *Introduction of quantum Fisher information*:
   Information Geometry and its Applications, August 02 - 06, 2010, Leipzig. (scientific committee member)

7. *Introduction to free probability*:
   September, Institute Mittag-Leffler, Quantum Information, 2010, Sweden. (invited participant)

8. *Efficient quantum tomography and complementarity*:
   Dissipative Systems: Entropy Methods, Classical and Quantum Probability, November 1-3, Wien. (keynote speaker)

In 2011:

1. *Matrix means*:
   University of Debrecen, February 17, 2011.

2. *Efficient quantum tomography and complementarity*:
   5th QUBIC Conference, March, 2011, Tohoku University.

3. *Complementarity on Hilbert spaces*:
   Hungarian Academy of Science, May 11, 2011, Budapest.

4. *Matrix means*:
   Kranjska Gora, May 26, 2011.

5. *Some structures of finite dimensional Hilbert spaces*:
   September, 2011, Bedlevo.