

Azhar Iqbal's Publication List

Book chapter

1. **A. Iqbal** and T. Cheon, Evolutionarily stability in quantum games, appeared as Chapter 13 in *Quantum Aspects of Life*, forward by Sir Roger Penrose, edited by D. Abbott, P.C.W. Davies and A. K. Pati, Imperial College Press, ISBN 978-1-84816-267-9 (2008).
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Refereed journal articles

2. **A. Iqbal**, L. J. Gunn, M. Guo, M. A. Babar, and D. Abbott, Game theoretical modelling of network/cyber security, accepted for publication in *IEEE Access* on Oct 8, 2019, preprint: <https://arxiv.org/abs/1901.08426> (2019).
3. **A. Iqbal** and D. Abbott, A game theoretical perspective on the quantum probabilities associated with a GHZ state, *Quantum Information Processing*, Vol. **17**, Art. No. 313 (2018).
4. **A. Iqbal**, J. M. Chappell, and D. Abbott, The equivalence of Bell's inequality and the Nash inequality in a quantum game-theoretic setting, *Physics Letters A*, Vol. **382**, Issue 40, pp 2908-2913 (2018).
5. **A. Iqbal**, V. Masson, and D. Abbott, Kidnapping model: an extension of Selten's game, *Royal Society Open Science*, Vol. **4**, Art. No. 171484 (2017).
6. J. M. Chappell, J. G. Hartnett, N. Iannella, **A. Iqbal**, and D. Abbott, Time as a geometric property of space, *Frontiers in Physics* **4**, Art. No. 44 (2016).
7. S. Zhou, D. G. Valchev, A. Dinovitser, J. M. Chappell, **A. Iqbal**, B. W.-H. Ng, T. W. Kee, and D. Abbott, Terahertz signal classification based on geometric algebra, *IEEE Transactions on Terahertz Science & Technology* **6**(6), pp. 793–802 (2016).
8. J. M. Chappell, **A. Iqbal**, J. G. Hartnett, and D. Abbott, The vector algebra war: a historical perspective, *IEEE Access* **4**, pp. 1997–2004 (2016).
9. **A. Iqbal**, J. M. Chappell, and D. Abbott, On the equivalence between non-factorizable mixed-strategy classical games and quantum games, *Royal Society OS* **3**, Art. No. 150477 (2016).
10. **A. Iqbal**, J. M. Chappell, and D. Abbott, Social optimality in quantum Bayesian games, *Physica A: Statistical Mechanics and its Applications* **436**, pp 798–805 (2015).
11. J. M. Chappell, **A. Iqbal**, L. J. Gunn, and D. Abbott, Functions of multivector variables, *PLOS ONE* **10**(3), Art. No. e0116943 (2015).
12. **A. Iqbal**, J. M. Chappell, Q. Li, Charles E. M. Pearce, and D. Abbott, A probabilistic approach to the quantum Bayesian games of incomplete information, *Quantum Information Processing* **13**, pp 2783–2800 (2014).

13. J. M. Chappell, S. P. Drake, C. L. Seidel, L. J. Gunn, **A. Iqbal**, A. Allison, D. Abbott, Geometric algebra for electrical and electronic engineers, *Proceedings of IEEE* **102**(9), pp 1340–1363 (2014).
14. Q. Li, M. Chen, M. Perc, **A. Iqbal**, and D. Abbott, Effects of adaptive degrees of trust on coevolution of quantum strategies on scale-free networks, *Scientific Reports* **3**, Art. No. 2949 (2013).
15. Q. Li, **A. Iqbal**, M. Perc, M. Chen, and D. Abbott, Coevolution of quantum and classical strategies on evolving random networks, *PLOS ONE* **8**(7), Art. No. e68423 (2013).
16. J. M. Chappell, **A. Iqbal**, M. A. Lohe, L. von Smekal, and D. Abbott, An improved formalism for quantum computation based on geometric algebra—case study: Grover's search algorithm, *Quantum Information Processing* **12**(4), pp 1719–1735 (2013).
17. J. M. Chappell, **A. Iqbal**, N. Iannella, and D. Abbott, Revisiting special relativity: A natural algebraic alternative to Minkowski spacetime, *PLOS ONE* **7**(12), Art. No. e51756 (2012).
18. Q. Li, **A. Iqbal**, M. Chen, and D. Abbott, Evolution of quantum strategies on a small-world network, *European Physical Journal B* **85**, Art. No. 376 (2012).
19. Q. Li, **A. Iqbal**, M. Chen, and D. Abbott, Evolution of quantum and classical strategies on networks by group interactions, *New Journal of Physics* **14**, Art. No. 103034 (2012).
20. J. M. Chappell, **A. Iqbal** and D. Abbott, N-player quantum games in an EPR setting, *PLOS ONE* **7**(5), Art. No. e36404 (2012).
21. K. Eshraghian, O. Kavehei, K. -R. Cho, J. M. Chappell, **A. Iqbal**, S. F. Al-Sarawi and D. Abbott, Memristive device fundamentals and modelling: Applications to circuits and systems simulation, invited paper, *Proceedings of IEEE* **100**(6), pp 1991–2007 (2012).
22. Q. Li, **A. Iqbal**, D. Abbott and M. Chen, Quantum strategies win in a defector-dominated population, *Physica A: Statistical Mechanics and its Applications* **391**(11), pp 3316–3322 (2012).
23. J. M. Chappell, **A. Iqbal** and D. Abbott, Analysis of two-player quantum games in an EPR setting using geometric algebra, *PLOS ONE* **7**(1), Art. No. e29015 (2012).
24. J. M. Chappell, **A. Iqbal** and D. Abbott, Analyzing three-player quantum games in an EPR type setup using geometric algebra, *PLOS ONE* **6**(7), Art. No. e21623 (2011).
25. J. M. Chappell, M. A. Lohe, L. von Smekal, **A. Iqbal**, D. Abbott, A precise error bound for quantum phase estimation, *PLOS ONE* **6**(5), Art. No. e19663 (2011).
26. O. Kavehei, **A. Iqbal**, Y. S. Kim, K. Eshraghian, S. F. Al-Sarawi and D. Abbott, The fourth element: characteristics, modelling, and electromagnetic theory of the memristor, *Proceedings of the Royal Society A* **466**(2120), pp. 2175–2202 (2010).
27. **A. Iqbal** and D. Abbott, Constructing quantum games from a system of Bell's inequalities, *Physics Letters A* **374**(31–32), pp. 3155–3163 (2010).

28. J. M. Chappell, **A. Iqbal** and D. Abbott, Constructing quantum games from symmetric non-factorizable joint probabilities, *Physics Letters A* **374**(40), pp. 4104–4111 (2010).
29. **A. Iqbal** and D. Abbott, Quantum matching pennies game, *Journal of the Physical Society of Japan* **78**, Art. No. 014803 (2009).
30. **A. Iqbal** and D. Abbott, Non-factorizable joint probabilities and evolutionarily stable strategies in the quantum prisoner's dilemma game, *Physics Letters A* **373**(30), pp. 2537–2541 (2009).
31. J. M. Chappell, **A. Iqbal**, M. A. Lohe and L. von Smekal, An analysis of the quantum penny flip game using geometric algebra, *Journal of the Physical Society of Japan* **78**, Art. No. 054801 (2009).
32. **A. Iqbal**, T. Cheon and D. Abbott, Probabilistic analysis of three-player symmetric quantum games played using EPR setting, *Physics Letters A* **372**(44), pp. 6564–6577 (2008).
33. T. Cheon and **A. Iqbal**, Bayesian Nash equilibria and Bell inequalities, *Journal of the Physical Society of Japan* **77**, Art. No. 024801 (2008).
34. **A. Iqbal** and T. Cheon, Constructing quantum games from non-factorizable joint probabilities, *Physical Review E* **76**, Art. No. 061122 (2007). This article was selected to be reproduced in January 2008 issue of *Virtual Journal of Quantum Information*: <http://www.vjquantuminfo.org>.
35. **A. Iqbal**, Playing games with EPR-type experiments, *Journal of Physics A: Mathematical & Theoretical* **38**(43), pp. 9551–9564 (2005).
36. **A. Iqbal**, Quantum correlations and Nash equilibria of a bi-matrix game, *Journal of Physics A: Mathematical & Theoretical* **37**(29), pp. L353–L359 (2004).
37. **A. Iqbal** and S. Weigert, Quantum correlation games, *Journal of Physics A: Mathematical & General* **37**, pp. 5873–5885 (2004).
38. **A. Iqbal** and A. H. Toor, Stability of mixed Nash equilibria in a symmetric quantum game, *Communications in Theoretical Physics* **42**(3), pp. 335–338 (2004).
39. **A. Iqbal**, Quantum games with a multi-slit electron diffraction set-up, *Nuovo Cimento B* **118**(5), pp. 463–468 (2003).
40. **A. Iqbal** and A. H. Toor, Backwards-induction outcome in a quantum game, *Physical Review A* **65**, Art. No. 052328 (2002). [This article was selected to be reproduced in May 2002 issue of *Virtual Journal of Quantum Information*: <http://www.vjquantuminfo.org>.]
41. **A. Iqbal** and A. H. Toor, Quantum mechanics gives stability to a Nash equilibrium, *Physical Review A* **65**, Art. No. 022306 (2002). [This article was selected to be reproduced in February 2002 issue of *Virtual Journal of Biological Physics Research*: <http://www.vjbio.org>.]
42. **A. Iqbal** and A. H. Toor, Darwinism in quantum systems? *Physics Letters A* **294**(5–6), pp. 261–270 (2002).

43. **A. Iqbal** and A. H. Toor, Quantum repeated games, *Physics Letters A* **300**(6), pp. 537–542 (2002).
 44. **A. Iqbal** and A. H. Toor, Quantum cooperative games, *Physics Letters A* **293**(3–4), pp. 103-108 (2002).
 45. **A. Iqbal** and A. H. Toor, Entanglement and dynamic stability of Nash equilibria in a symmetric quantum game, *Physics Letters A* **286**(4), pp. 245–250 (2001).
 46. **A. Iqbal** and A. H. Toor, Evolutionarily stable strategies in quantum games, *Physics Letters A* **280** (5–6), pp. 249–256 (2001).
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Fully refereed conference proceedings

47. S. L. Zhou, D. G. Valchev, A. Dinovitsner, J. M. Chappell, **A. Iqbal**, B. W. H. Ng, T. W. Kee, and D. Abbott, Dispersion-independent terahertz classification based on Geometric Algebra for substance detection, International Conference on Infrared, Millimeter, and Terahertz Waves, IRMMW-THz 2016, Copenhagen, Denmark, September 25-30 (2016).
 48. P. Bruza, **A. Iqbal** and K. Kitto, The role of non-factorizability in determining "pseudo-classical" non-separability, *AAAI-Fall 2010 Symposium on Quantum Informatics for Cognitive, Social, and Semantic Processes*, Washington DC, November 11–13 (2010): <http://sites.google.com/site/qiscience/home>.
 49. **A. Iqbal** and T. Cheon, Constructing multi-player quantum games from non-factorizable joint probabilities, *Proc. SPIE Microelectronics, MEMS, and Nanotechnology*, Australian National University, Canberra, **6802**, Art. No. 68020A (2008).
 50. O. Kavehei, Y.-S. Kim, **A. Iqbal**, K. Eshraghian, S. F. Al-Sarawi, and D. Abbott, The fourth element: Insights into the Memristor, *Proceedings of the International Conference on Communications, Circuits and Systems*, California, USA, pp. 921–927 (2009).
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Conference Presentations & Posters

51. **A. Iqbal**, A unifying framework for classical and quantum games, presentation in Conference on Recent Advances in Mathematical Methods, Models and Applications, Centre for Advanced Studies in Mathematics, Lahore University of Management Sciences, Lahore, Pakistan (2009).
52. **A. Iqbal** and D. Abbott, Quantum matching pennies game, poster presentation in 18th Biennial Australian Institute of Physics Congress, University of Adelaide (2008).
53. **A. Iqbal** and T. Cheon, Constructing quantum games from non-factorizable probabilities, poster presentation in Asian Conference on Quantum Information, Shiran Kaikan, Kyoto University, Kyoto, Japan (2007).
54. **A. Iqbal**, Anisotropy and coercive fields in thin magnetic films, poster presentation in Second National Seminar on Engineering Materials and Metallurgy, Karachi, Pakistan (1998).

55. **A. Iqbal**, M. M. Gualini, M. M. Ashraf, S. Shahdin, and M. A. Atta, Mathematical modelling of the slow flow diffusion-cooled CO₂ laser, presentation in National Workshop on Mathematical Models: Their Development and Use, Islamabad, Pakistan (1998).
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Working/Online/Submitted Papers

56. **A. Iqbal**, Looking at world events through the prism of game theory, published online by SAGE International Australia, <http://www.sageinternational.org.au/articles/looking-at-world-events-through-the-prism-of-game-theory/>, (2016).
57. **A. Iqbal** and D. Abbott, Quantum strategies and evolutionary stability (in Urdu), <https://arxiv.org/abs/1901.09741>, (2019).
58. **A. Iqbal**, P. Hoodbhoy, & D. Abbott, Can Quantum-Mechanical Description of Physical Reality Be Considered Complete? (An Urdu Translation). Published online by the Eqbal Ahmad Centre for Public Education: <https://eacpe.org/can-quantum-mechanical-description-of-physical-reality-be-considered-complete-urdu/>