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Is the essence of a quantum game captured completely in the original classical game?

Colin Benjamin National Institute of Science Education and Research, India

S. J. van Enk and R. Pike in PRA 66, 024306 (2002), argue that the equilibrium solution to a quantum game isn't unique but is already present in the classical game itself. In this work, we debunk this assertion by showing that a random strategy in a particular quantum (Hawk-Dove) game is unique to the quantum game. In other words the equilibrium solution of the quantum Hawk-Dove game cannot be obtained in the classical Hawk-Dove game. Moreover, we provide an analytical solution to the quantum 2×2 strategic form Hawk-Dove game using random mixed strategies. The random strategies which we describe are evolutionary stable implying both Pareto optimality and Nash equilibrium with their payoff's classically unobtainable.

Biography

Colin Benjamin is a READER F of School of Physical Sciences at the National Institute of Science Education and Research in India. His research focuses on Condensed matter theory and quantum information, quantum information theory and game theory. He has received DAAD Research Stay Award in May 2016 at RWTH Aachen University, Germany & NASI-SCOPUS Young scientist award in Physical Sciences. He published the book "Electron transport and quantum interference at the mesoscopic scale" and many Research Articles in the turf of Physical Sciences.

colin.nano@gmail.com

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