

Quantum Game with Restricted Matrix Strategies

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(Received: 2003-5-6; Revised:)

Abstract: We study a quantum game played by two players with restricted multiple strategies. It is found that in this restricted quantum game Nash equilibrium does not always exist when the initial state is entangled. At the same time, we find that when Nash equilibrium exists the payoff function is usually different from that in the classical counterpart except in some special cases. This presents an explicit example showing quantum game and classical game may differ. When designing a quantum game with limited strategies, the allowed strategy should be carefully chosen according to the type of initial state.

PACS: 03.67.Lx, 03.67.Hk, 89.70.+c

Key words: quantum game, matrix strategy, entanglement

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