Quantum Physics

Noise effects in a three-player Prisoner's Dilemma quantum game

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We study the three-player Prisoner's Dilemma game under the effect of decoherence and correlated noise. It is seen that the quantum player is always better off over the classical players. It is also seen that the game's Nash equilibrium does not change in the presence of correlated noise in contradiction to the effect of decoherence in multiplayer case. Furthermore, it is shown that for maximum correlation the game does not behave as a noiseless game and the quantum player is still better off for all values of the decoherence parameter p which is not possible in the two-player case. In addition, the payoffs reduction due to decoherence is controlled by the correlated noise throughout the course of the game.

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