

Abstract Submitted
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Quantum Game Theory: Prisoner's Dilemma MICHAEL LUVPAUL,
McMurry University — Quantum game theory is an increasingly growing field and will continue to grow as the realization of widespread quantum computation draws near. I will present some of the basic tenants of classical game theory before giving an example of a classical game that can be improved upon greatly with the application of quantum information. In this game, The Prisoner's Dilemma, there is a classical disconnect between the Nash Equilibrium and the Pareto Optimal outcome. I will show that if the prisoners have access to an entangled pair of qubits they can improve this to a Quantum Nash Equilibrium with a payout equal to that of Pareto Optimal, thus removing the "dilemma." Moreover, discussion of probable future effects of outcomes such as these and their societal impact will be explored.

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