

Undergraduate Seminar : Semester II/2011

On the Concept of Quantum Games in Physics

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Abstract

Games Theory is an area of study within applied mathematics which is very useful to describe behavior of interesting system in many fields. In physics, the theory of games performs in two schemes, classical and quantum representations, depending on the nature of the considering system. The classical scheme is used to be an alternatively conventional tool for explaining some characteristic properties yielded via optimization, such as in cellular automata calculation. Another one, quantum games, is an extension of classical games designed to support the quantum systems. The quantum phenomena which result from more than one type of states as in quantum communication can be formulated as games, and can be analyzed by games formalism also. In this seminar, the classical and quantum versions of Prisoner's dilemma, the first and well known example in quantum games, will most be used to introduce this concept and other related detail.

keywords : quantum games theory, quantum information, quantum statistical mechanics