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# ON CONCEPTS OF THE SOLUTION FOR MATRIX GAMES WITH FUZZY PAYOFFS[1]

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The classical game theory assumes that all data of a game are known by players. However, in real game situations often the players are not able to evaluate exactly some data of the game. It means that the certainty assumption is not realistic in many occasions. This lack of precision may be modeled by different ways and a fuzzy approach is one of them.

In this talk we deal with non cooperative two-person zero-sum games with fuzzy payoffs. Namely, we consider matrix games where each component of the payoff matrix is a general fuzzy number, i.e. not restricted to belong to any particular family. The earliest study of matrix games with fuzzy payoffs given with triangular fuzzy numbers is due to L. Campos [1]. The main difficulty that appears in the study of these games is the comparison between the payoff values associated to the strategies of the players because these payoffs are fuzzy quantities.

We provide a method to analyze these games finding equivalent linear programming problems with parameters whose solutions give the solutions of the games. We also give the formal definition of the value of a fuzzy payoff matrix game and propose a natural way to find it. This solution concept shares some of the most important properties listed in all approaches to this subject in the literature (see e.g. [2] and [3]).

Finally, we focus on several numerical examples to illustrate utility of our approach. We compare the values obtained by solving the corresponding parametric linear programming problem with the results obtained applying the most important models introduced by L. Campos, D.F. Li, C.R. Bector and R.R. Yager, T. Maeda, S.T. Liu and C. Kao, J.J. Buckley and L.J. Jowers, L. Xu.

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