ON THE USEFULNESS OF COOPERATION IN THREE-PERSON GAMES

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Three-person games in which each player maximizes his payoff function are considered. The question on the usefulness of a union of three players, which is interesting for cooperative game theory, is studied. The aim of the cooperation is that each player increases his guaranteed payoff. Effective sufficient conditions are obtained under which the union of the players is useful for each of them. The linear case is considered separately. In this case, rather general results are obtained in a constructive form. In the second part of the paper, the question on the usefulness of cooperation of three players in the presence of the fourth player—Nature—is studied. The behavior of Nature is assumed to be unpredictable; it may harm any individual player or the union of the players. Note that the situation considered in the second part is related to A.V. Kryazhimskii's talk delivered in the summer of 2014. We obtain constructive conditions under which the union of the players is beneficial in this situation as well.

Keywords: three-person game, cooperation, usefulness.

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