SOFT GAMES ON SOFT TOPOLOGICAL SPACES

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Abstract. In this paper, we give new types of soft games, dual soft games, determined soft games and undetermined soft games. We study the equivalences between types of soft games. In these soft games, players I and II alternately choose points and their soft sets respectively. Player I wins if and only if the moves of II cover the space of game by soft topological space.

1. Introduction

Molodtsov [9] initiated a novel concept of soft set theory, which is a completely new approach for modeling vagueness and uncertainty. He successfully applied the soft set theory to several directions such as smoothness of functions, game theory, Riemann Integration, and theory of measurement. In recent years, development in the fields of soft set theory and its application has been taking place in a rapid pace. This is because of the general nature of parameterization expressed by a soft set. Cagman et al. [2] modified the definition of soft sets which is similar to that of Molodtsov. Soft topological spaces which deal with uncertainties have been studied by some authors as Shabir et al. [10] and Cagman [2] initiated the study of soft topological spaces. They defined separately soft topology and established their several properties. Moldtsov [9] described the person's behavior with the help of the s-function which for any set of strategies indicates the set of ϵ-optimal choices. He asked which s-function has to be chosen for describing the person's behavior under uncertainty. Recently, game theory has been extended to topological spaces [4, 5, 6, 7] and their applications.

Throughout this paper, suppose we have a soft game for Nash equilibrium of two players I and II in a new form $< (F_i, E_i), S_i : i = 1, 2, \ldots, n >$. The soft strategy of this game players I and II alternately choose points and their soft open sets respectively. I wins if and only if the moves of II soft cover the soft topological space. Finally, we give a generalization for the concept of equivalence between soft games.