SOFT RINGS RELATED TO FUZZY SET THEORY

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Abstract
We deal with soft rings based on some fuzzy sets, in particular, by using the so called $\in$–soft sets and q-soft sets. Some characterization theorems of soft rings defined on soft sets are given and soft regular rings are hence characterized by special soft sets.

Keywords: Soft rings, Idealistic soft rings, Bi-idealistic soft rings, Quasi-idealistic soft rings, $(\in, \in \lor q)$-fuzzy subrings , $(\in, \in \lor q)$-fuzzy subrings , regular rings, soft regular rings.

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1. Introduction
In dealing with the complicated problems in economics, engineering and environmental sciences, we are usually unable to apply the classical methods because there are various uncertainties in these problems. There are three theories involved, namely, the theory of probability, the theory of fuzzy sets and the interval mathematics which are considered as the fundamental tools in dealing with uncertainties, however all these theories have their own difficulties. Since uncertainties cannot be simply handled by using traditional mathematics, one has to apply a wider range of existing theories such as probability, intuitionistic fuzzy sets, vague sets, interval mathematics, rough sets and so on to deal with the situation. It is noted that all these theories have their own difficulties which have been pointed out in [13]. Maji et al. [12] and Molodtsov [13] have observed that one reason for these difficulties may be due to the inadequacy of the parametrization

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