ABSTRACT

This thesis consists of five chapters is essentially confined to a study of fuzzy probability and fuzzy stochastic processes. Chapter 1 is introductory in nature which bears the preliminaries of the thesis and a detailed literature survey. Chapter 2 contemplates on the notion and properties of order in probability, smaller order in probability and at most order in probability of fuzzy random variables. Chapter 3 is devoted to the establishment of Helly's theorem and Helly Bray theorem which are proved using the notion of fuzzy valued functions and fuzzy distribution functions. Chapter 4 unfolds a theoretical framework of a new probability space using the fuzzy relation 'less than' proposed by Krzysztof Piasecki. Using this theoretical framework, the concept of regular conditional probabilities are introduced. Using this fuzzy probability measure Baye’s theorem is established. Chapter 5 deals with the notions of stochastic comparison of fuzzy stochastic processes. Conditions are obtained under which fuzzy stochastic process is stochastically larger than another fuzzy stochastic process. Stochastic comparisons for functionals of fuzzy stochastic processes which are of practical importance are derived.