

1023-00-1677

Zengxiang Tong* (ztong@otterbein.edu), Department of Mathematical Sciences, Otterbein College, Westerville, OH 43081. *The Generalized Extension Principle in Fuzzy Set Theory and Its Applications*. Preliminary report.

The extension principle, introduced by Lotfi A. Zadeh in the year of 1964, is one of the fundamental ideas of Fuzzy Set Theory. It provides a general method for extending nonfuzzy mathematical concepts in order to deal with fuzzy quantities. Zadeh's extension principle uses a pair of operators max and min. In the past three decades, a variety of theoretical and practical problems required new operators other than max and min. This paper introduces an abstract operator which is called Abelian Continuous Monotone Operator (ACMO). By using the ACMO, this paper proposes a generalization of the extension principle, which is called the General Extension Principle (GEP), and applies the GEP in the areas of Fuzzy Arithmetic and Fuzzy Analysis, producing interesting results in these areas. (Received September 26, 2006)