South East Asian J. of Math. & Math. Sci. **ISSN : 0972-7752**
Vol.13, No.2, 2017, pp. 47-62

AN INNOVATIVE APPROACH ON NANO SOFT TOPOLOGICAL SPACE

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(Received: September 08, 2017)

Abstract: In this paper, we investigate a new method of nano topological space stimulated by soft set. The soft set is generated in lower approximation, upper approximation and boundary region, called as **"Nano Soft Topological Space(NSTS)"**. We study the properties of soft approximation space $(\mathcal{U}, F_A)$ in NSTS. Further, we define with an example a new soft matrices induced by binary relation through the NSTS. To study the real life application, we carried out an comparative analysis between nano topological space and NSTS induced by soft matrix.

Keywords and Phrases: Soft lower approximation, Soft upper approximation, Soft boundary region, Soft approximation space, Soft matrix.

2010 Mathematics Subject Classification: 54A05, 54A10, 54B05.

1. Introduction

Lellis Thivagar et.al [3] introduced a nano topological space with respect to a subset X of an universe, which is defined in terms of lower and upper approximations and boundary region. The nano topological space is discussed in approximation space$(\mathcal{U}, R)$. The concept of soft set was first introduced by Molodtsov [5] in 1999 as a general mathematical tool for studying the uncertain objects. In this paper we define nano soft topological space using soft set. We also study the soft approximation space $(\mathcal{U}, F_A)$ in nano soft topological space. The properties of soft lower and soft upper approximations are discussed with an example. Further, we defined and studied the properties of soft matrix based on nano soft topological space. An example containing a comparative analysis between approximation space based on nano topological space [3] and nano soft topological space induced