People's Democratic Republic of Algeria
Ministry of Higher Education and Scientific Researche
Algerian Journal of Engineering, Architecture and Urbanism
https://www.aneau.org/ajeau/
ISSN : 2588-1760
Head office : A.N.E.A.U. Assoc. USTO, Bir El Djir, Oran, 31000, Algeria

Vol. 5 Nr. 2 2021

Summary

Algerian Journal of Engineering Architecture and Urbanism Vol. 5 Nr. 2 2021
ISSN: 2588-1760

NEUTROSOPHIC TOPOLOGIES GENERATED BY NEUTROSOPHIC RELATIONS

Soheyb MILLES
Dr, Laboratory of Pure and Applied Mathematics, University of M'sila
Department of Mathematics and Informatics, University Center of Barika, Algeria,
e-mail: soheyb.milles@univ-msila.dz

Nacereddine HAMMAMI
Dr, Computer Engineering Departement, College of Engineering and Computer Sciences,
Mustaqbal University, Saudi Arabia,
e-mail: nshammami-t@uom.edu.sa

Abstract:
In a recent paper, Mishra and Srivastava have introduced and studied fuzzy topology generated by fuzzy relation and some basic properties were proved. In this paper, we generalize this notion to the setting of neutrosophic sets. Moreover, some necessary examples are given. To that end, we investigate fundamental properties of this topology in terms of its lower and upper contour sets.

Key words: Neutrosophic set, Neutrosophic topology, Neutrosophic binary relation.

1 Introduction

It is a well-known fact by now that topologies in crisp set theory are among the oldest acquaintances of modern mathematics and play an important role in many mathematical branches (both pure and applied), as well as in differentiable equations, dynamical systems, knot theory, and Riemann surfaces in complex analysis. In 1969, Smithson introduced the notion of topology generated by binary relation as a famous classes of general topology and it appear in many applications such as in preference representation theorems [7] and for obtaining continuous representability of binary relations [8, 10] and to provide the notion of nearness or proximity between two elements of an arbitrary set without using any distance function on it [16]. Also, it used in important applications such as computing topologies [34], recombination spaces [11]. In general, it was and still more common.

In [5], Attanassov introduced the concept of intuitionistic fuzzy set which is an extension of fuzzy set, characterized by a membership (truth-membership) function and a non-membership (falsity-membership) function for the elements of a universe X. Moreover, there is a restriction that the sum of both values is less and equal to one. Recently, F. Smarandache [24] generalized the Atanassov's intuitionistic fuzzy sets and other types of sets to the notion of neutrosophic sets. The concept introduced in [24] deals with imprecise and indeterminate data. Neutrosophic sets are