Abstract No. 08 ***Mathematics***

SOME RESULTS RELATED TO A NEW TYPE OF CONNECTEDNESS IN TOPOLOGICAL SPACES

P. Piriyalucksan

Department of Mathematics and Statistics, University of Jaffna, Jaffna, Sri Lanka
ppiriyalucksan@gmail.com

General topology facilitates the study of important qualitative properties of spaces and maps, such as continuity, connectedness, and compactness. New forms of continuity and compactness have recently been introduced in topology; they are referred to as F-continuous and F-compact, respectively. An open subset A of the topological space (X,τ) is called F-open if $\bar{A}\backslash A$ is finite. A map $k:(X,\tau)\to(Y,\sigma)$ is F-continuous, if $k^{-1}(U)$ is F-open in X for every open set U in Y. Similarly, a topological space (X,τ) is F-compact if and only if any open cover of X has a finite subcover of F-open sets. This study focuses on some recent findings concerning the new concept called F-connectedness. A topological space (X,τ) is called F-connected, if it cannot be written as the union of two disjoint F-open sets. Initially, this study proves that a surjective F-continuous image of an F-connected space is connected. In general, the continuous image of a connected space is connected, however in F-setting, surjectivity should be needed. Subsequently, the following is proved: If (X,τ) is a F-connected space, and (Y,σ) is a F-homeomorphism of(X,τ), then the latter space is F-connected. Next, the study proves that if A,B are two subsets of a topological space such that $A\subseteq B\subseteq\bar{A}$ and A is F-connected, then B is also F-connected. Finally, it is proved that the finite union of a family of F-connected sets is also F-connected, provided that the intersection of the family is non-empty. In the future, it is intended to extend this study to investigate F-separation axioms. Also, this study expects to extend the results obtained to bitopological or tritopological environments.

Keywords: F-connectedness, F-continuous, F-homeomorphism, F-open, Topological spaces