

**SEPARATION AXIOMS AND COMPACTNESS IN FERMATEAN  
FUZZY SOFT TOPOLOGY**

**Archana Kumari Prasad, Anita Singh Banafar\*, Jyoti Pandey Bajpai\*  
and Samajh Singh Thakur\***

Department of Mathematics,  
Swami Vivekanand Government College,  
Lakhnadon - 480886, Madhya Pradesh, INDIA

E-mail : akkumariprasad@gmail.com

\*Department of Mathematics,  
Jabalpur Engineering College,  
Jabalpur - 482011, Madhya Pradesh, INDIA

E-mail : anita.banafar1@gmail.com, jyotipbajpai@gmail.com,  
ssthakur@jecjabalpur.ac.in

(**Received:** Apr. 01, 2024 **Accepted:** Aug. 18, 2024 **Published:** Aug. 30, 2024)

**Abstract:** In this paper, we define and explore several properties of Fermatean fuzzy soft  $T_i$ ,  $i = 0,1,2$ , Fermatean fuzzy soft regular, Fermatean fuzzy soft  $T_3$ , Fermatean fuzzy soft normal, and Fermatean fuzzy soft  $T_4$  axioms using Fermatean fuzzy soft points. We also discuss some Fermatean fuzzy soft invariance properties namely Fermatean fuzzy soft topological property and Fermatean fuzzy soft hereditary property. Furthermore Fermatean fuzzy soft compactness is defined and its characterizations and preserving properties under Fermatean fuzzy soft continuous mappings are figured out.

**Keywords and Phrases:** Fermatean fuzzy soft sets, Fermatean fuzzy soft topology, Fermatean fuzzy soft separation axioms and Fermatean fuzzy soft compactness.

**2020 Mathematics Subject Classification:** 54A40, 54C05, 03E72.