



On Rough Topological Spaces

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Abstract

The notion of a rough family has been recently introduced in [?, ?] to explore rough ideal convergence in topological spaces. This study primarily aims to introduce novel topological concepts, such as the rough interior and rough closure of a set from the perspective of a rough family, leading to the definition of rough open sets and rough closed sets. As a consequence, we generate a new topology in a given topological space, referred to as a rough topology. We characterize this rough topology and examine its relationship with the existing topology. Furthermore, we extend the notion of homeomorphism to rough homeomorphism and construct several examples that demonstrate that two non-homeomorphic spaces can be roughly homeomorphic under certain roughness. Our findings diverge from some previous results, generate novel properties.

Keywords: Rough family, rough open set, rough closed set, rough topology, rough homeomorphism.

References:

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