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IMPACT OF FIXED-POINT THEOREMS ON FUZZY 2-METRIC SPACE

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ABSTRACT

Fixed point theorems serve as pivotal pillars in mathematical analysis, offering profound insights into the behavior of mappings across various spaces. In the realm of fuzzy 2-metric spaces, these theorems wield significant influence, shaping both theoretical frameworks and practical applications. By establishing conditions for the existence and uniqueness of fixed points, they provide invaluable tools for understanding the dynamics of fuzzy mappings within these spaces. Moreover, fixed point theorems contribute to elucidating the topological properties induced by 2-metrics, thereby enriching our comprehension of the underlying space's structure. Beyond theoretical implications, they fuel algorithmic advancements, furnishing the groundwork for iterative methods crucial in solving equations and optimization problems. Furthermore, these theorems pave the way for generalizations and extensions tailored to the unique characteristics of fuzzy 2-metric spaces, fostering deeper insights and novel discoveries. Thus, the impact of fixed point theorems reverberates throughout the study of fuzzy 2-metric spaces, catalyzing progress at the intersection of fuzzy set theory, metric space theory, and functional analysis.