

# Applications to Differential Equations of Fixed Point Theorems in b-Multiplicative Metric Spaces

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## ABSTRACT

In this study, we prove some fixed point theorems in b-Multiplicative Metric Spaces for contractive mappings. These spaces introduce a new perspective on distance measurements by incorporating a non-negative real-valued function that modifies the standard metric. Several illustrative examples are provided to demonstrate the versatility and applicability of b-multiplicative metric spaces. Using such results, we establish the existence and uniqueness of solutions to ordinary differential equations. The abstract concludes with a discussion of potential areas of research and the importance of fixed point theorems in advancing our understanding of b-multiplicative metric spaces, as well as their applications in differential equations.

**Keywords:** Fixed Point, b-Multiplicative Metric Space, Differential Equation

