



**A STUDY OF THE CAPUTO FRACTIONAL DIFFERENTIAL
OPERATOR UNDER TWO-DIMENSIONAL
SPACE ROTATION**

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Abstract

The transformation property of the Caputo fractional derivative operator of a scalar function under rotation in two dimensional space is derived. The study of the transformation property is essential for the formulation of fractional calculus in multi-dimensional space. The inclusion of fractional calculus in the Lagrangian and Hamiltonian dynamics relies on such transformation. An illustrative example is given.

Keywords and phrases: fractional calculus, Caputo differential operator of fractional derivative, two dimensional space.

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