# 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.