ON SPECIAL FUNCTION CHANGE OF mth- ROOT FINSLER METRIC

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Abstract: In the present paper, we consider the special function change of $m^{th}-$ root Finsler metric. Firstly, we find the fundamental metric and then the necessary and sufficient condition under which the special function change of the $m^{th}-$ root Finsler metric is locally dually flat. Further, we prove that the special change of $m^{th}-$ root Finsler metric is locally projectively flat if and only if it is locally Minkowskian.

Keywords and Phrases: Locally dually flat metric, projectively flat metric, $m^{th}-$ root metric, Special function change, fundamental metric tensor.

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1. Introduction

Let M be an n-dimensional C^{∞} manifold, TM its tangent bundle. Let $F = A^{\frac{1}{M}}$ be a Finsler metric on M, where A is given by $A = a_{i_1\,i_2\ldots\ldots i_m}(x)\ y^{i_1}\ y^{i_2}\ldots\ldots y^{i_m}$ with $a_{i_1\,i_2\ldots\ldots i_m}$ symmetric in all its indices ([13], [21], [4], [8]). Then F is called an $m^{th}-$ root Finsler metric. Suppose that A_{ij} is a positive definite tensor and A^{ij} denotes