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ON *h*-RANDERS EXPONENTIAL CHANGE OF FINSLER METRIC

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Abstract: Studying an (α, β)-metrics is a central idea in Finsler geometry, which is a generalization of Randers metric. In this paper, we have derived the Cartan connection for the Finsler space whose metric is given by h-Randers exponential change and also obtained the condition under which the Finslerian hypersurface to be hyperplane of first, second and third kind.

Keywords and Phrases: Finsler space, hypersurface, Randers change, exponential change, h-vector.

2020 Mathematics Subject Classification: 53B40.

1. Introduction

Nearly four decades ago, C. Shibata [17] introduced the idea of β-change in Finsler geometry. Randers change, Matsumoto change, exponential change, and Kropina change are very important example of β-change. Among them, exponential change is one of the interesting examples with $F = Le^{\beta/\alpha}$, where $\beta = b_j(x)y^j$ is 1-form and $\alpha = (a_{jk}(x)y^j y^k)^{1/2}$ is a Riemannian metric in the manifold M^n. In 2006, a Finsler space with metric function determined by exponential change has been studied by Yu Yao-Yong and You Ying [20]. In 2013, G. Shankar *et al.* [14] discussed Randers change of exponential metric. The first approximation of exponential change has been studied by T. N. Pandey *et al.* [12]. In 2016 Gupta and Gupta [2] have discussed h-exponential change and also obtained hypersurface for the exponential change of Finsler metric with an h-vector, given by $\overline{L} = Le^{\beta/L}$