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Title: On distance functions induced by Finsler metrics

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In this paper, we find the necessary and sufficient condition under which a distance function is induced by a Finsler metric. Then, we study some analytical properties of distance functions induced by Finsler metrics. Projectively flat Finsler metrics on a convex domain in $\mathbb{R}^n$ are regular solutions to Hilbert's Fourth Problem. We find necessary and sufficient condition for a Finsler metric to be projectively flat through its induced distance function.

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