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On hypersurface of the Finsler space obtained by conformal $\beta$-change. (English)

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Summary: The conformal $\beta$-change of Finsler metric $L(x, y)$ is given by $L^*(x, y) = e^{\sigma(x)} f(L(x, y), \beta(x, y))$, where $\sigma(x)$ is a function of $x$, $\beta(x, y) = b_i(x)y^i$ is a one-form on the underlying manifold $M^n$, and $f(L(x, y), \beta(x, y))$ is a homogeneous function of degree one in $L$ and $\beta$. Let $F^n$ and $F^*n$ be Finsler spaces with metric functions $L$ and $L^*$ respectively. In this paper we study the hypersurface of $F^*n$ and find condition under which this hypersurface becomes a hyperplane of first kind, a hyperplane of second kind and a hyperplane of third kind. In this endeavour we connect quantities of $F^*n$ with those of $F^n$. When the hypersurface of $F^*n$ is a hyperplane of first kind, we investigate the conditions under which it becomes a Landsberg space, a Berwald space, or a locally Minkowskian space.

MSC:

53B40 Local differential geometry of Finsler spaces and generalizations (areal metrics)
53C60 Global differential geometry of Finsler spaces and generalizations (areal metrics)

Keywords:
Finsler space; hypersurface; Cartan-parallel; hyperplane; conformal $\beta$-change; homothetic $\beta$-change

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