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**Title:** A new class of projectively flat Finsler metrics in terms of hypergeometric functions

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In this paper, we study a class of Finsler metrics in the form  $F(x, y) = |y|\phi(|x|, \frac{\langle x, y \rangle}{|y|})$ . We obtain the second-order differential equation for  $F$  to be projectively flat and manufacture new projectively flat Finsler metrics on an open subset in  $\mathbb{R}^n$  using hypergeometric functions. We also express  $F$  in terms of elementary functions in some special cases.

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