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**Title:** On a family of connections in Finsler geometry

**Author(s):** Akbar Tayebi, Esmail Azizpour and Ebrahim Esrafilian

In this paper, we introduce a new family of linear torsion-free connections for Finsler metrics. This family of connections defines a Riemannian curvature tensor  $R$  and a non-Riemannian quantity  $P$ . We show that  $P$  contains all the non-Riemannian information, namely,  $P = 0$  if and only if the Finsler metric is Riemannian. In fact, this family of connections makes a systematical analysis of connections that characterize Riemannian metrics.

**Address:**

Akbar Tayebi  
Department of Mathematics and Computer Sciences  
Iran University of Science and Technology  
Tehran  
Iran  
*E-mail:* akbar\_tayebi@iust.ac.ir

**Address:**

Esmail Azizpour  
Department of Mathematics, Faculty of Sciences  
The University of Guilan  
PO Box 1914  
Rasht  
Iran  
*E-mail:* e\_azizpour@guilan.ac.ir

**Address:**

Ebrahim Esrafilian  
Department of Mathematics  
Iran University of Science and Technology  
Tehran  
Iran