

**CONFORMALLY FLAT LOCALLY MINKOWSKI FINSLER SPACE
WITH A SPECIAL CUBIC (α, β) -METRIC**

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ABSTRACT. The purpose of this work is to explore a special class of p -power Finsler metric called the cubic (α, β) -metric and to determine the circumstances under which the Finsler space containing such a special metric will be locally Minkowskian and Conformally flat. Furthermore, we proved that under homothetic Conformal transformation, this metric is Conformally Minkowskian and Conformally Berwald.

REFERENCES

- [1] B.K. Tripathi and P. Kumar: *Douglas spaces for some (α, β) -metric of a Finsler spaces*, J. Adv. Math. Stud., **15**(2022), No. 4, 444-455.
- [2] C. Shibata: *On Finsler spaces with Kropina metric*, Rep. Math. Phys., **13**(1978), 117-128.
- [3] G. Yang: *On a class of Einstein-reversible Finsler metrics*, Differential Geom. Appl., **60**(2018), 80-103.
- [4] H.S. Park and E.S. Choi: *On a Finsler space with a special (α, β) -metric*, Tensor (N.S.), **56**(1995), 142-148.
- [5] H.S. Shukla and A.P. Tiwari: *Conformal correspondence of Finsler spaces with special (α, β) -metric*, J. Tensor Soc., **6**(2012), No. 1, 35-41.
- [6] L.P. Eisenhart: *Riemannian Geometry*, Princeton University Press, 1925.
- [7] M. Hashiguchi: *On conformal transformation of Finsler spaces*, J. Math. Kyoto Univ., **16**(1976), No. 1, 25-50.
- [8] M. Hashiguchi: *To Promote a Better Understanding of Finsler Geometry. Lecture Notes*, Yenngnam Univ., 1993.
- [9] M. Hashiguchi and Y. Ichijyo: *On some special (α, β) -metric*, Rep. Fac. Sci. Kagoshima Univ. (Math., Phys., Chem.), **8**(1975), 39-46.
- [10] M. Matsumoto: *On C-reducible Finsler spaces*, Tensor (N.S.), **24**(1972), 29-37.
- [11] M. Matsumoto: *Theory of Finsler spaces with (α, β) -metric*, Rep. Math. Phys., **31**(1972), 43-83.
- [12] M. Matsumoto: *Foundation of Finsler Geometry and Special Finsler Spaces*, Kaiseisha Press, Otsu, Japan, 1986.
- [13] M.S. Knebelman: *Conformal geometry of generalized metric space*, Proc. Natl. Acad. Sci. USA, **15**(1929), No. 4, 376-379.
- [14] P.N. Pandey and G.P. Yadav: *Conformal change of Finsler space with (α, β) -metric*, Bull. Transilv. Univ. Braşov Ser. III, **12(61)**(2019), No. 2, 409-418.
- [15] P.L. Antonelli, R.S. Ingarden and M. Matsumoto: *The Theory of Sprays and Finsler Spaces with Applications in Physics and Biology*, Kluwer Academic Publishers, Netherlands, 1993.
- [16] P. Kumar and B.K. Tripathi: *Finsler spaces with some special (α, β) -metric of Douglas type*, Malaya J. Mat., **7**(2019), No. 2, 132-137.
- [17] S. Kikuchi: *On the condition that a space with (α, β) -metric be locally Minkowskian*, Tensor (N.S.), **33**(1979), 242-246.

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- [18] Y. Ichijyo and M. Hashiguchi: *On the condition that a Randers space be conformally flat*, Rep. Fac. Sci. Kagoshima Univ. (Math., Phy., Chem.), **22**(1989), 7-14.

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