# On the Existence of $\phi$-Recurrent $(LCS)_n$-Manifolds

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*Abstract*: The object of the present paper is to provide the existence of $\phi$-recurrent $(LCS)_n$-manifolds with several non-trivial examples.

*Key words*: $(LCS)_n$-manifold, locally $\phi$-recurrent, 1-form, manifold of constant curvature, scalar curvature.

AMS *Subject Class.* (2000): 53C15, 53C25.

## References

[1] A.A. Shaikh, On Lorentzian almost paracontact manifolds with a structure of the concircular type, *Kyungpook Math. J.* **43** (2003), 305 – 314.

[2] A.A. Shaikh, K.K. Baishya, On $\phi$-symmetric *LP*-Sasakian manifolds, *Yokohama Math. J.* **52** (2006), 97 – 112.

[3] B. O'Neill, "Semi-Riemannian Geometry. With Applications to Relativity", Academic Press, Inc., New York, 1983.

[4] K. Matsumoto, On Lorentzian almost paracontact manifolds, *Bull. Yamagata Univ. Natur. Sci.* **12** (1989), 151 – 156.

[5] T. Takahashi, Sasakian $\phi$-symmetric spaces, *Tohoku Math. J.* **29** (1977), 91 – 113.