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Geometry of twisted Sasaki metric. (English) Zbl 07140524
J. Geom. Symmetry Phys. 53, 1-19 (2019).

The Sasaki metric was introduced in [*W. Klingenberg* and *S. Sasaki*, Tohoku Math. J. (2) 27, 49–56 (1975; [Zbl 0309.53036](#))]. Its attractive nature has enticed many geometers to study its and its related structures [*K. Yano* and *S. Ishihara*, Tangent and cotangent bundles. Differential geometry. New York, NY: Marcel Dekker, Inc. (1973; [Zbl 0262.53024](#)); *N. Cengiz* and *A. A. Salimov*, Appl. Math. Comput. 142, No. 2–3, 309–319 (2003; [Zbl 1034.53016](#)); *S. Gudmundsson* and *E. Kappos*, Expo. Math. 20, No. 1, 1–41 (2002; [Zbl 1007.53027](#)); *S. Gudmundsson* and *E. Kappos*, Tokyo J. Math. 25, No. 1, 75–83 (2002; [Zbl 1019.53017](#)); *I. Vaisman*, J. Geom. Symmetry Phys. 18, 63–86 (2010; [Zbl 1207.53058](#)); *A. A. Salimov* et al., Mediterr. J. Math. 6, No. 2, 135–147 (2009; [Zbl 1230.53041](#)); *J. Cheeger* and *D. Gromoll*, Ann. Math. (2) 96, 413–443 (1972; [Zbl 0246.53049](#)); *J. Wang* and *Y. Wang*, “On the geometry of tangent bundles with the rescaled metric”, [arXiv:1104.5584](#); *B. V. Zayatuev*, Math. Notes 76, No. 5, 682–688 (2004; [Zbl 1086.53047](#)); translation from Mat. Zametki 76, No. 5, 732–739 (2004)].

The principal objective in this paper is to introduce the twisted Sasaki metric on the tangent bundle TM as a new natural metric non-rigid on TM . The authors investigate the geometry of the twisted Sasaki metrics and characterize the Einstein structure (Theorem 8). The sectional curvature (Theorem 9) and the scalar curvature (Theorem 11) are determined.

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MSC:

[58A03](#) Topos-theoretic approach to differentiable manifolds
[58A05](#) Foundations of differentiable manifolds

Keywords:

Einstein structure; natural metrics; twisted Sasaki metric

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