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M-projectively flat spacetimes. (English) Zbl 1289.53089

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Summary: The object of the present paper is to study M-projectively flat Rimannian manifolds. It is shown that an M-projectively flat Riemannian manifold is an Einstein manifold. In addition, some theorems about energy-momentum tensors satisfying the Einstein field equations with a cosmological constant of the M-projectively flat spacetime are proved.

MSC:

53C15 General geometric structures on manifolds (almost complex, almost product structures, etc.)
53C25 Special Riemannian manifolds (Einstein, Sasakian, etc.)
53B15 Other connections
53B20 Local Riemannian geometry
83C05 Einstein's equations (general structure, canonical formalism, Cauchy problems)

Keywords:

M-projective curvature tensor; energy-momentum tensor; Killing vector field; conformal Killing vector field; symmetry inheritance property; quadratic Killing tensor; quadratic conformal Killing tensor