



Year: 2005

Vol.: 67

Fasc.: 3-4

Title: On a class of Einstein space-time manifolds

Author(s): Adela Mihai and Radu Rosca

We deal with a general space-time (M, g) with usual differentiability conditions and hyperbolic metric g of index 1, which carries 3 skew-symmetric Killing vector fields X, Y, Z having as generative the unit time-like vector field e of the hyperbolic metric g . It is shown that such a space-time (M, g) is an Einstein manifold of curvature -1 , which is foliated by space-like hypersurfaces M_s normal to e and the immersion $x : M_s \rightarrow M$ is pseudo-umbilical. In addition, it is proved that the vector fields X, Y, Z and e are exterior concurrent vector fields and X, Y, Z define a commutative Killing triple, M admits a Lorentzian transformation which is in an orthochronous Lorentz group and the distinguished spatial 3-form of M is a relatively integral invariant of the vector fields X, Y and Z .

Address:

Adela Mihai
Faculty of Mathematics
University of Bucharest
Str. Academiei 14
010014 Bucharest
Romania
E-mail: adela@math.math.unibuc.ro

Address:

Radu Rosca
59 Av. Emile Zola
75015 Paris
France