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# GEOMETRIC STRUCTURES ON THE DIFFERENTIABLE MANIFOLD TO ITS FRAME BUNDLE

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## ABSTRACT

We study the geometric structures such as metallic structures, almost  $r$ -contact structure on the frame bundle  $FM$ . A tensor field  $\tilde{J}$  is defined on  $FM$  and shows that it is a metallic structure on  $FM$ . Let  $g^D$  be the diagonal lift of a Riemannian metric  $g$ . We investigate the diagonal lift  $g^D$  is a metallic Riemannian metric on  $FM$ . We discuss some results on the derivative and coderivative of 2-form  $F$  of metallic Riemannian structure on  $FM$ . Next, the Nijenhuis tensor of tensor field  $\tilde{J}$  on  $FM$  is calculated. Finally, a locally metallic Riemannian manifold  $(FM, J^H, g^D)$  is described as an application.

**Keywords** First keyword · Second keyword · More but not less than 3

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