DYNAMIC EQUATIONS IN PRINCIPAL FIBER BUNDLES. INVARIANCE PROPERTIES

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Abstract. The results proved for the rigid body in [8] are extended to general deformable mechanical systems and presented in the geometrical framework of principal fiber bundles. The conditions for the dynamic equations of these systems be invariant under the changes of Galilean frames are derived. It is shown that these invariance conditions are also sufficient to allow the cancellation of the gravitational forces in an accelerated frame, what is a remarkable connection. We verify on the examples of multibody systems and affinely deformable body exposed in [2] that they are fulfilled.

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