Vladimir BALAN

Variational problems in the geometrized first-order jet framework

In the framework of geometrized jet spaces of first order endowed with a Lagrange structure, is discussed the existence of Lagrangian canonic nonlinear connections. The Euler-Lagrange equations for certain Kronecker-type Lagrangian cases are derived, and extensions of the known results are provided.

For spaces endowed with Cartan and Berwald linear N-connections, are presented the special curves of the geometrized jet space (h-paths, v-paths, stationary curves and geodesics) which extend the minimal paths of Riemannian geometry. For the case of vertical metric independent of fiber coordinates, the first two variations of energy and the extended Jacobi field equations are determined, emphasizing the presence of torsion and non-holonomic character of the framework.

Selective references

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Author's address:
Vladimir Balan
University Politehnica of Bucharest, Department Mathematics I
Splaiul Independenţei 313, RO-060042 Bucharest, Romania
Email address: vbalan@mathem.pub.ro