On the solvability of a class of general systems of variational equations with nonmonotone operators*

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Abstract

For a wide class of systems of variational equations depending on parameters with nonmonotone operators in a space $W = \sum_{\ell=1}^{n} W_\ell$, with W_ℓ real reflexive Banach space, we study the solvability, the existence of solutions with every components different to zero, the existence of multiple solutions and, in the omogeneous case, the existence of solutions with every positive components when W_ℓ is a vector lattice according to the fibering method. We obtain results which have many different applications. For example, they can be used in order to study Dirichlet and Neumann problems and to check ODE periodic solutions.

Keywords: *Variational equations; Constrained variational problems; Lagrange multipliers; Fibering method.*