

Variational-hemivariational Inequalities with Optimal Control

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Abstract

We study a class of elliptic variational-hemivariational inequalities in reflexive Banach spaces. An inequality in the class involves a nonlinear operator, a convex set of constraints and two nondifferentiable functionals, among which at least one is convex. The motivation to study the problem comes from Contact Mechanics and the fact that the inequality contains, as particular cases, various problems considered in the literature.

We deliver a result on existence and uniqueness of a solution to the inequality. The proof is based on arguments of surjectivity for pseudomonotone operators and the Banach fixed point theorem.

Then, we formulate optimal control problem for which we prove the existence of optimal pairs together with some convergence results.

This is a joint contribution with Stanisław Migórski and Mircea Sofonea.

References

- [1] S. Migorski, A. Ochal, M. Sofonea, A class of variational-hemivariational inequalities in reflexive Banach spaces, *Journal of Elasticity*, **127** (2017), 151-178, doi: 10.1007/s10659-016-9600-7

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