

Methods in Applied Nonlinear Analysis

On pseudomonotone parabolic variational inequalities with constraint

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Based on a joint work with O.Guibé, A. Mokrane and G. Vallet [1], we proved a result of existence with the corresponding Lewy-Stampacchia's inequalities, of the solution to some nonlinear variational inequalities governed by a pseudomonotone Leray Lions operators. My aim is to present such a result and propose some tools (*e.g.* integration by part formula, continuity in time and density of positive cones in a dual space) and techniques used to deal with the difficulties, which appear in the study of the problem. Our approach is based on unbounded penalization method of the constraint, associated with a suitable perturbation of the main operator.

References

- [1] O. GUIBÉ, A. MOKRANE, Y. TAHRAOUI AND G. VALLET, *Lewy-Stampacchia's inequality for a pseudomonotone parabolic problem*, Adv. Nonlinear Anal., 9 , 591-612 (2020).
- [2] YASSINE, TAHRAOUI, *Tools to prove a parabolic Lewy-Stampacchia's inequality*, Monografias Matemáticas Garcia de Galdeano, 42 , 285-295 (2020).