

Regularization of variational inequalities with monotone operators

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Abstract

We view some ideas for improvements, extensions and applications of proximal point methods to variational inequalities in Hilbert spaces. These methods are closely related and will be joined in a general framework, which admits a consecutive approximation of the problem data including applications of finite element techniques and the ε -enlargement of monotone operators.

With the use of a "reserve of monotonicity" of the operator in the variational inequality, the concept of weak proximal regularization are developed.

For Bregman-function-based proximal methods we analyze convergence under a relaxed error tolerance criterion in the subproblems.

Numerical examples for the resolution of ill-posed variational inequalities, like Signorini - and contact problems, will be presented.