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Finite Element Approximation of Hemivariational Inequalities

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Abstract. The paper deals with a finite element approximation of elliptic and parabolic variational inequalities. Elliptic hemivariational inequalities are equivalently expressed as a system consisting of one equation and one inclusion for a couple of unknowns, namely a primal variable u and an element belonging to a multivalued mapping at u. Both components of the solution are approximated independently each other by a finite element method. Parabolic inequalities are transformed into a system of elliptic ones by using an appropriate time discretization. A numerical experiment is realized by using non-smooth optimization methods.

Key words: Approximation of differential inclusions, Elliptic and parabolic hemivariational inequality, Non-smooth optimization methods

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