



On the Finite Element Approximation in the L^∞ - Norm of a Class of Semi-Linear Elliptic Systems of QVIs

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Abstract

In this work, we are concerned with the standard finite element approximation of a class of systems of elliptic quasi-variational inequalities (QVIs) with nonlinear source terms arising in stochastic control theory (see [1, 2]). The presence of nonlinear source terms further increases the mathematical complexity of the problem and makes the analysis of numerical approximations in the L^∞ -norm more challenging. By means of the concept of subsolutions, we establish the optimal convergence order of the approximation without requiring the assumption made in ([3], (2.6), p. 431), thereby encompassing a broader class of systems.

Keywords: Semilinear system, quasi-variational inequalities, subsolutions, finite element, L^∞ -error estimate.

References:

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