THE STRUCTURE OF PROJECTION METHODS FOR VARIATIONAL INEQUALITY PROBLEMS AND WEAK CONVERGENCE THEOREMS

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ABSTRACT. In this paper, we study the structure of projection methods for variational inequality problems and then prove weak convergence theorems which generalize Takahashi and Toyoda [W. Takahashi and M. Toyoda, Weak convergence theorems for nonepxansive mappings and monotone mappings, J. Optim. Theory Appl. 118 (2003), 417–428] and Nadezhkina and Takahashi [N. Nadezhkina and W. Takahashi, Weak convergence theorem by an extragradient method for nonexpansive mappings and monotone mappings, J. Optim. Theory Appl. 128 (2006), 191-201]. Our proofs are different from them. Furthermore, using these weak convergence theorems, we obtain some new results.