

## GENERALIZED SYSTEMS FOR RELAXED COCOERCIVE VARIATIONAL INEQUALITIES AND PROJECTION METHODS IN HILBERT SPACES

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*Abstract.* In this paper, we introduce a new algorithm for a generalized system for a relaxed cocoercive nonlinear inequality and an asymptotically nonexpansive mapping in Hilbert spaces by the convergence of projection methods. Our results include the previous results as special cases extend and improve the main results of [R.U. Verma, General convergence analysis for two-step projection methods and application to variational problems, *Appl. Math. Lett.* 18 (11) (2005), 1286-1292], [R.U. Verma, Generalized system for relaxed cocoercive variational inequalities and its projection methods, *J. Optim. Theory Appl.* 121 (1) (2004), 203-210], [R.U. Verma, Generalized class of partial relaxed monotonicity and its connections, *Adv. Nonlinear Var. Inequal.* 7 (2) (2004), 155-164], [N.H. Xiu, J.Z. Zhang, Local convergence analysis of projection type algorithms: Unified approach, *J. Optim. Theory Appl.* 115 (2002) 211-230], [N.H. Nie, Z. Liu, K.H. Kim, S.M. Kang, A system of nonlinear variational inequalities involving strong monotone and pseudocontractive mappings, *Adv. Nonlinear Var. Inequal.* 6 (2) (2003), 91-99], [S.S. Chang, H.W. Joseph Lee, C.K. Chan, Generalized system for relaxed cocoercive variational inequalities in Hilbert spaces, *Appl. Math. Lett.* 20 (3) (2007), 329-334] and many others.

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