Mathematical
Inequalities
& Applications
Volume 3, Number 2 (2000), 295–303

NEW CONVERGENCE RESULTS OF ITERATIVE METHODS FOR SET–VALUED MIXED VARIATIONAL INEQUALITIES

ABDELLATIF MOUDAFI AND MUHAMMAD ASLAM NOOR

Abstract. An iterative method for solving set-valued variational inequalities is considered and its convergence properties are studied under strong monotonicity and coercivity conditions. The results obtained in this paper include, as a special case, some known results in this field.

Mathematics subject classification (1991): 49M45, 90C30, 65K10.
Key words and phrases: Variational inequalities, iterative methods, maximal monotone operators, co-coercivity condition.

REFERENCES

[1] ADLY S. AND OETTLI W., *Solvability of generalized nonlinera symmetric variational inequalities*, J. Austral. Math. Soc. B 40 (1999), 289–300.
[2] ALVAREZ, F. AND ATTOUCH H., *The heavy ball with friction dynamical systems for convex constrained minimization problems*, Prépublications de l'Université Montpelier II, 1998.
[3] BERTSEKAS D. P. *Constrained Optimization and Lagrange Multiplier Methods*, Academic Press, New York, 1982.
[4] BRÉZIS H., *erateurs maximaux monotones et semi-groupes de contractions dans les espaces de Hilbert*, North Holland, Amsterdam, Holland, 1973.
[5] FLAM S. D., *Gradient approches to equilibrium*, Lecture Notes In Economics and Mathematical Systems, **452**, Springer-Verlag, Berlin, 49–60, 1997.
[6] GABAY D., *Applications of the method of multipliers to variational inequalities*, In Augmented Lagrangian Methods: Application to the solution of Boundary-Valued Problems, North Holland, Amsterdam, 299–331, 1983.
[7] HAN S. P. AND LOU G., *A parallel algorithm for a class of convex programs*, SIAM J. Control Optim. **26** (1988), 345–355.
[8] LEMAIRE B., *On the convergence of some iterative methods for convex minimization*, Recent Developements in Optimization, Lecture Notes in Economics and Mathematical Systems, **452** (1997), 154–167.
[9] LIONS P. L. AND MERCIER B., *Splitting algorithms for the sum of two nonlinear operators*, SIAM J. Num. Anal., **16** (1979), 964–979.
[10] MOUDAFI A. AND THÉRA M., *Finding a zero of the sum of two maximal monotone operators*, J. Optim. Theory Appl., **94** (1997), 425–448.
[11] NOOR M. A., *Monotone mixed variational inequalities*, Math. Computer Modelling **29** (1999), 87–93.
[12] NOOR M. A., *Generalized mixed variational inequalities and resolvent equations*, Positivity **1** (1997), 145–154.
[13] OPIAL G. B., *Weak convergence of sequence of successive approximations for nonexpansive mapping*, Bull. Amer. Math. Soc., **77** (1967), 591–597.
[14] PANAGIOTOPOULOS P. D. AND STAVROULAKIS G. E., *New types of variational principles based on the notion of quasidifferentiability*, Acta Mechanic, **94** (1994), 171–194.
[15] PASSTY G. B., *Ergodic convergence to a zero of the sum of monotone operators*, J. Math. Anal. and Aplp. **72** (1979), 383–390.
[16] ROCKAFELLAR R. T., Monotone operators and the proximal algorithm, SIAM J. Control. Opt., **14**(5) (1976), 877–898.

[17] SIBONY M., *Methodes itteratives pour les equations aux derivees partielles nonlineaires de type monotone*, Calcolo **7**, 65–183.
[18] STAMPACCHIA G., *Formes bilineaires coercitives sur les ensembles convexes*, C.R. Académies Sci. Paris 258, 413-416, 1964.
[19] TSENG P. *CA modified forward-backward splitting method for maximal monotone mappings*, SIAM J. Control Optim. (1998), to appear.
[20] ZHU D. L. AND MARCOTTE P. *Co-coercivity and the role in the convergence of iterative schemes fo solving variational inequalities*, SIAM J. on Optimization, **6** 3 (1996), 714–726.