

## GENERAL FRAMEWORK FOR SENSITIVITY ANALYSIS TO A CLASS OF NONLINEAR RELAXED COCOERCIVE QUASIVARIATIONAL INCLUSIONS

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*Abstract.* Based on the generalized resolvent operator technique, sensitivity analysis results for relaxed cocoercive quasivariational inclusions are obtained, which generalize a broad range of sensitivity analysis results, including strongly monotone quasivariational inclusions. Generalized resolvent operator technique is constructed on the emergence of the new notion of  $A$ -monotonicity — a significant generalization to the notion of maximal monotonicity. The notion of  $A$ -monotonicity is also referred to as  $A$ -maximal monotonicity in literature. Furthermore, the relaxed cocoercivity is illustrated by some examples.

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*Key words and phrases:* Sensitivity analysis, relaxed cocoercive quasivariational inclusions, maximal monotone mapping, relaxed maximal monotone mapping,  $A$ -monotone mapping,  $H$ -monotone mappings, generalized resolvent operator technique.

### REFERENCES

- [1] R. P. AGARWAL, Y. J. CHO AND N. J. HUANG, *Sensitivity analysis for strongly nonlinear quasivariational inclusions*, Applied Mathematics Letters **13**(2000), 19–24.
- [2] Y. P. FANG AND N. J. HUANG,  *$H$ -monotone operators and system of variational inclusions*, Communications on Applied Nonlinear Analysis **11**(1)(2004), 93–101.
- [3] H. IIDUKA AND W. TAKAHASHI, *Strong convergence theorem by a hybrid method for nonlinear mappings of nonexpansive and monotone type and applications*, Advances in Nonlinear Variational Inequalities **9**(1)(2006), 1–9.
- [4] J. KYPARISIS, *Sensitivity analysis framework for variational Inequalities*, Mathematical Programming **38**(1987), 203–213.
- [5] A. MOUDAFI, *Mixed equilibrium problems: Sensitivity analysis and algorithmic aspect*, Computers and Mathematics with Applications **44**(2002), 1099–1108.
- [6] R. L. TOBIN, *Sensitivity analysis for variational inequalities*, Journal of Optimization Theory and Applications **48**(1)(1986), 191–204.
- [7] R. U. VERMA, *Nonlinear variational and constrained hemivariational inequalities involving relaxed operators*, ZAMM: Z. Angew. Math. Mech. **77**(5)(1997), 387–391.
- [8] R. U. VERMA, *Generalized system for relaxed cocoercive variational inequalities and projection methods*, Journal of Optimization Theory and Applications **121**(1)(2004), 203–210.
- [9] R. U. VERMA,  *$A$ -monotonicity and applications to nonlinear variational inclusion problems*, Journal of Applied Mathematics and Stochastic Analysis **17**(2)(2004), 193–195.
- [10] R. U. VERMA,  *$A$ -monotonicity and its role in nonlinear variational inclusions*, Journal of Optimization Theory and Applications **129**(3)(2006), 457–467.
- [11] E. ZEIDLER, *Nonlinear Functional Analysis and its Applications II/B*, Springer-Verlag, New York, New York, 1990.
- [12] E. ZEIDLER, *Nonlinear Functional Analysis and its Applications I*, Springer-Verlag, New York, New York, 1986.