

1124-47-303

**Dhruba R. Adhikari\*** (dadhikar@kennesaw.edu), Kennesaw State University, Department of Mathematics, 1100 S. Marietta Pkwy, Math Building - Bldg. D, Marietta, GA 30060. *Solvability of Inclusions Involving Perturbed Maximal Monotone Operators.*

The existence of nontrivial solutions of the operator inclusion of the form  $Lx + Tx + Cx \ni 0$ ,  $x \in X$ , will be discussed. Here,  $X$  is a real reflexive Banach space with  $X^*$  its dual,  $L : X \supset D(L) \rightarrow X^*$  a densely defined linear maximal monotone operator, and  $T : X \supset D(T) \rightarrow 2^{X^*}$ ,  $0 \in T(0)$ , a strongly quasibounded maximal monotone and positively homogeneous of degree 1. Also,  $C : X \supset D(C) \rightarrow X^*$  is bounded, demicontinuous and of type  $(S_+)$  w.r.t. to  $D(L)$ . In the special case when  $L = 0$ , a mapping  $G : D(G) \rightarrow X^*$  of class  $(P)$  introduced by Hu and Papageorgiou will be considered and the existence of nonzero solutions of  $Tx + Cx + Gx \ni 0$ , where  $T$  is only maximal monotone and positively homogeneous of degree  $\alpha \in (0, 1]$ , will also be discussed. Applications to elliptic partial differential equations involving  $p$ -Laplacian with  $p \in (1, 2]$  and time-dependent parabolic partial differential equations on cylindrical domains will be presented. (Received September 12, 2016)