TRAJECTORY APPROXIMATE CONTROLLABILITY AND OPTIMAL CONTROL FOR NONINSTANTANEOUS IMPULSIVE INCLUSIONS WITHOUT COMPACTNESS

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ABSTRACT. In this paper, a noninstantaneous impulsive differential inclusion model is established based on the heating phenomenon of the rod. The controllability problem for this system governed by a semilinear differential inclusion with noninstantaneous impulses is studied in a Banach space and in this differential inclusion system we assume that the semigroup generated by the linear part of the inclusion is not compact. We suppose that the set-valued nonlinearity satisfies a regularity condition expressed in terms of the Hausdorff measure of noncompactness and some sufficient conditions for approximately controllability for both upper and almost lower semicontinuous types of nonlinearity are presented. Also we discuss existence and the stability of optimal control. As an application, the controllability for a differential inclusion system governed by a heat equation is considered.