
We consider a nonlinear differential inclusion and we prove that the reachable set of a certain variational inclusion is a derived cone in the sense of Hestenes to the reachable set of the initial differential inclusion. This result allows to obtain a sufficient condition for local controllability along a reference trajectory.


We consider a Cauchy problem for a nonlinear differential inclusion in separable and nonseparable Banach spaces under Filippov type assumptions and several existence results are obtained.


We consider a nonlinear differential inclusion and we obtain sufficient conditions for $h$-local controllability along a reference trajectory. To derive this result we use convex linearizations of the nonlinear differential inclusion. More precisely, we show that the nonlinear differential inclusion is $h$-locally controllable around a solution $z$ if a certain linearized inclusion is $\lambda$-locally controllable around the null solution for every $\lambda \in \partial h(z(T))$, where $\partial h$ denotes Clarke’s generalized Jacobian of the locally Lipschitz function $h$. 