

ON CONTROLLABILITY FOR A FRACTIONAL DIFFERENTIAL INCLUSION OF CAPUTO-FABRIZIO TYPE*

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Dedicated to Dr. Vasile Drăgan on the occasion of his 70th anniversary

Abstract

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

MSC: 34A60, 26A33, 26A42, 34B15.

keywords: fractional derivative, differential inclusion, local controllability

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