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A NOTE ON MILD SOLUTIONS FOR NONCONVEX FRACTIONAL SEMILINEAR DIFFERENTIAL INCLUSIONS*

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Abstract

We consider a Cauchy problem for a fractional semilinear differential inclusions involving Caputo's fractional derivative in non separable Banach spaces under Filippov type assumptions and we prove the existence of solutions.

MSC: 34A60, 26A33, 34B15

keywords: fractional derivative, fractional semilinear differential inclusion, Lusin measurable multifunctions.

1 Introduction

Differential equations with fractional order have recently proved to be strong tools in the modelling of many physical phenomena. As a consequence there was an intensive development of the theory of differential equations of fractional order ([20, 22, 24] etc.). The study of fractional differential inclusions was initiated by El-Sayed and Ibrahim ([17]). Very recently several qualitative results for fractional differential inclusions were obtained in [1, 3, 7-11,

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