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On nonlocal problems for semilinear second order differential inclusions without compactness. (English) [Zbl 07444223](#)

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Summary: Existence of mild solutions for a nonlocal abstract problem driven by a semilinear second order differential inclusion is studied in Banach spaces in the lack of compactness both on the fundamental system generated by the linear part and on the nonlinear multivalued term. The method used for proving our existence theorems is based on the combination of a fixed point theorem and a selection theorem developed by ourselves with an approach that uses De Blasi measure of noncompactness and the weak topology. As application of our existence result we present the study of the controllability of a problem guided by a wave equation.

MSC:

[34G25](#) Evolution inclusions

[47N20](#) Applications of operator theory to differential and integral equations

[34B10](#) Nonlocal and multipoint boundary value problems for ordinary differential equations

[93B05](#) Controllability

Keywords:

nonlocal abstract problem; semilinear second order differential inclusion; fundamental system; De Blasi measure of noncompactness; controllability problem; wave equation

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