Mei, Zhan-Dong; **Peng, Ji-Gen**; **Zhang, Yang**
On general fractional abstract Cauchy problem. (English) Zbl 1273.34012
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Summary: This paper is concerned with general fractional Cauchy problems of order $0 < \alpha < 1$ and type $0 \leq \beta \leq 1$ in infinite-dimensional Banach spaces. A new notion, named general fractional resolvent of order $0 < \alpha < 1$ and type $0 \leq \beta \leq 1$, is developed. Some of its properties are obtained. Moreover, some sufficient conditions are presented to guarantee that the mild solutions and strong solutions of homogeneous and inhomogeneous general fractional Cauchy problem exist. An illustrative example is presented.

MSC:

34A08	Fractional ordinary differential equations and fractional differential inclusions	Cited in **2** Documents
47D06	One-parameter semigroups and linear evolution equations	
34A12	Initial value problems, existence, uniqueness, continuous dependence and continuation of solutions to ordinary differential equations	
34G20	Nonlinear differential equations in abstract spaces	

Keywords:

general fractional abstract Cauchy problem; general Riemann-Liouville fractional derivative; general fractional resolvent

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