

## **Globally Attractive Mild Solutions for Non-Local in Time Subdiffusion Equations of Neutral Type**

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**Abstract :** In this work is proved the existence of at least one globally attractive mild solution to the Cauchy problem, for fractional evolution equation of neutral type, involving the fractional derivate in Caputo sense. An almost sectorial operator on a Banach space  $X$  and a kernel belonging to a large class appears in the equation, which covers many relevant cases from physics applications, in particular, the important case of time - fractional evolution equations of neutral type. The main tool used in this work was the Hausdorff measure of noncompactness and fixed point theorems, specifically Darbo-type. Initially, the equation is a Cauchy problem, involving a fractional derivate in Caputo sense. Then, is formulated the equivalent integral version, and defining a convenient functional, using the analytic integral resolvent operator, and verifying the hypothesis of the fixed point theorem of Darbo type, give us the existence of mild solution for the initial problem. Furthermore, each mild solution is globally attractive, a property that is desired in asymptotic behavior for that solution.

**Keywords :** attractive mild solutions, integral Volterra equations, neutral type equations, non-local in time equations

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