

## GLOBALLY ATTRACTIVE MILD SOLUTIONS FOR NON-LOCAL IN TIME SUBDIFFUSION EQUATIONS OF NEUTRAL TYPE

JORGE GONZÁLEZ-CAMUS — CARLOS LIZAMA

---

ABSTRACT. We prove the existence of at least one globally attractive mild solution to the equation

$$\partial_t(b * [x - h(\cdot, x(\cdot))])(t) + A(x(t) - h(t, x(t))) = f(t, x(t)), \quad t \geq 0,$$

under the assumption, among other hypothesis, that  $A$  is an almost sectorial operator on a Banach space  $X$  and the kernel  $b$  belongs to a large class, which covers many relevant cases from physics applications, in particular the important case of time-fractional evolution equations of neutral type.

### 1. Introduction

Existence of globally attractive solutions for mathematical models is a very challenging topic that is drawing the attention of many researchers in the last decade. For instance, Alzabut and Abdeljawad in [1] studied the existence of a globally attractive periodic solutions of an impulsive delay logarithmic population model. Bartuccelli, Deane and Gentile [3] analyzed globally and locally attractive solutions for quasi-periodically forced systems, and Li and Cheng [8] established conditions for the existence of globally attractive periodic solutions

---

2020 *Mathematics Subject Classification.* 34K40, 34K37, 35R11, 45D05.

*Key words and phrases.* Attractive mild solutions; non-local in time equations; neutral type equations; integral Volterra equations.

J. González-Camus was supported by ANID under grant Doctorado Nacional Chile 2016 Number 21160120.

C. Lizama is partially supported by FONDECYT grant number 1180041.