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FORCED FRACTIONAL LIÉNARD EQUATION AND ALMOST PERIODIC SOLUTIONS

Souhila Boudjema[1,*], Abdelkader Bouadi[2]

[1], [2] *University of Skikda, Algeria*

ABSTRACT

In this work, we investigate a class of forced fractional Liénard-type differential equations involving mixed derivatives, combining Caputo fractional derivatives of order greater than one with classical derivatives. The equation depends on a parameter taking values in a Banach space. Assuming that the zero function is a solution for a specific value of the parameter, we prove the existence of almost periodic mild solutions that depend continuously and differentiably on this parameter.

***K*eywords** Almost periodic, Fractional differential equations, Liénard equation

References

[1] J. Blot and S. Boudjema, Small almost periodic and almost automorphic oscillations in forced Liénard equations, *J. Abstr. Differ. Equ. Appl.*, **1**(1), 75–85 (2010).

[2] J. Blot, P. Cieutat, G.M. N'Guérékata and D. Pennequin, Superposition operators between various spaces of almost periodic function spaces and applications, *Commun. Math. Anal.*, **6**(1), 42–70 (2009).

[3] P. Yu, G. Ni and C. Hou, Existence and uniqueness for a mixed fractional differential system with slit-strips conditions, *Bound. Value Probl.*, **2024**(128), Article ID 128 (2024).

[4] Y. Zhou and F. Jiao, Almost automorphic solutions for a class of fractional functional differential equations, *Electron. J. Differ. Equ.*, Vol. 2014, No. 14, 1–14 (2014).

[*] *Corresponding Author's E-mail: s.boudjema2022@gmail.com*