

Nonautonomous fractional oscillon equation

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Abstract

In this work we are concerned with the asymptotic behavior of nonautonomous fractional approximations of oscillon equation

$$u_{tt} - \mu(t)\Delta u + \omega(t)u_t = f(u), \quad x \in \Omega, \quad t \in \mathbb{R},$$

subject to Dirichlet boundary condition on $\partial\Omega$, where Ω is a bounded smooth domain in \mathbb{R}^N , $N \geq 3$, the function ω is a time-dependent damping, μ is a time-dependent squared speed of propagation, and f is a nonlinear functional. Under structural assumptions on ω and μ we establish the existence of time-dependent attractor for the fractional models in the sense of Carvalho, Langa, Robinson [3] and Di Plinio, Duane, Temam [4].

Joint work with the professors Phd. Marcelo J. D. Nascimento (UFSCar, Brazil) and Phd. Flank D. M. Bezerra (UFPB, Brazil).

Research partially supported by CAPES/Finance Code 001/2019, Brazil.

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