

GLOBAL EXISTENCE FOR VECTOR VALUED FRACTIONAL REACTION-DIFFUSION EQUATIONS

AGUSTÍN BESTEIRO AND DIEGO RIAL

Abstract: In this paper we study the initial value problem for infinite dimensional fractional non-autonomous reaction-diffusion equations. Applying general time-splitting methods, we prove the existence of solutions globally defined in time using convex sets as invariant regions. We expose examples where biological and pattern formation systems, under suitable assumptions, achieve global existence. We also analyze the asymptotic behavior of solutions.

2010 Mathematics Subject Classification: 35K55, 35K57, 35R11, 35Q92, 92D25.

Key words: fractional diffusion, global existence, Lie–Trotter method.