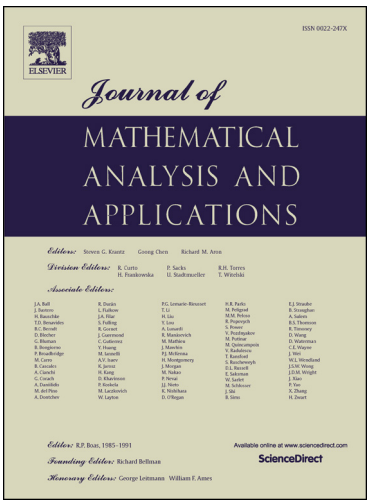
Accepted Manuscript



Stochastic reaction-diffusion equations on networks with dynamic time-delayed boundary conditions

Francesco Cordoni, Luca Di Persio

PII: S0022-247X(17)30147-6
DOI: http://dx.doi.org/10.1016/j.jmaa.2017.02.008
Reference: YJMAA 21133

To appear in: *Journal of Mathematical Analysis and Applications*

Received date: 5 June 2016

Please cite this article in press as: F. Cordoni, L. Di Persio, Stochastic reaction-diffusion equations on networks with dynamic time-delayed boundary conditions, *J. Math. Anal. Appl.* (2017), http://dx.doi.org/10.1016/j.jmaa.2017.02.008

This is a PDF file of an unedited manuscript that has been accepted for publication. As a service to our customers we are providing this early version of the manuscript. The manuscript will undergo copyediting, typesetting, and review of the resulting proof before it is published in its final form. Please note that during the production process errors may be discovered which could affect the content, and all legal disclaimers that apply to the journal pertain.

ACCEPTED MANUSCRIPT

Stochastic reaction-diffusion equations on networks with dynamic time-delayed boundary conditions

Francesco Cordoni[1] and Luca Di Persio[2]
[1] University of Trento - Department of Mathematics
Via Sommarive, 14 Trento, 38123-ITALY
e-mail: francesco.cordoni@unitn.it
[2] University of Verona - Department of Computer Science
Strada le Grazie, 15 Verona, 37134-ITALY
e-mail: luca.dipersio@univr.it

Abstract

We consider a reaction-diffusion equation on a network subjected to dynamic boundary conditions, with time delayed behaviour, also allowing for multiplicative Gaussian noise perturbations. Exploiting semigroup theory, we rewrite the aforementioned stochastic problem as an abstract stochastic partial differential equation taking values in a suitable product Hilbert space, for which we prove the existence and uniqueness of a mild solution. Eventually, a stochastic optimal control application is studied.
AMS Subject Classification: 60H15, 65C30, 93E20, 35K57
Key Words and Phrases: Stochastic reaction-diffusion equations; dynamic boundary conditions; time-delayed boundary conditions; multiplicative Gaussian perturbations; Semigroup theory; Stochastic Partial Differential Equations in infinite dimension; Stochastic Optimal Control.

1 Introduction

Recent years have seen an increasing attention to the study of diffusion problems on networks, especially in connection with the theory of stochastic processes. In fact, there is a broad area of possible applications where the

Download English Version:

https://daneshyari.com/en/article/5775050

Download Persian Version:

https://daneshyari.com/article/5775050

Daneshyari.com