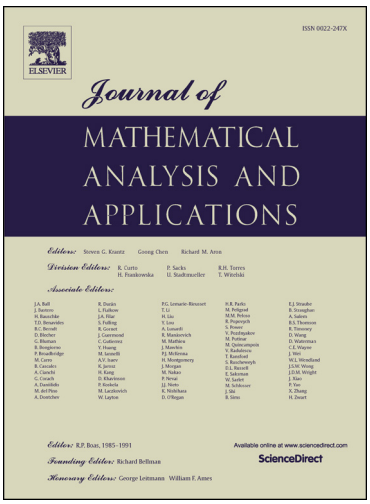
Accepted Manuscript



Approximate the dynamical behavior for stochastic systems by Wong-Zakai approaching

Zhongkai Guo, Xingjie Yan, Weifeng Wang, Xianming Liu

PII: S0022-247X(17)30752-7
DOI: http://dx.doi.org/10.1016/j.jmaa.2017.08.004
Reference: YJMAA 21611

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

Received date: 24 March 2017

Please cite this article in press as: Z. Guo et al., Approximate the dynamical behavior for stochastic systems by Wong-Zakai approaching, *J. Math. Anal. Appl.* (2017), http://dx.doi.org/10.1016/j.jmaa.2017.08.004

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

Approximate the dynamical behavior for stochastic systems by Wong-Zakai approaching ☆

Zhongkai Guo
School of Mathematics and Statistics,
South-Central University for Nationalities,
Wuhan, 430074, China
E-mail: zhongkaiguo@hust.edu.cn

*Xingjie Yan**
Department of Mathematics,
China University of Mining and Technology,
Xuzhou, 221008, China
E-mail: yanxj04@163.com

Weifeng Wang
School of Mathematics and Statistics,
South-Central University for Nationalities,
Wuhan, 430074, China
E-mail: wwf87487643@163.com

Xianming Liu
School of Mathematics and Statistics,
Huazhong University of Science and Technology,
Wuhan, 430074, China
E-mail: xmliu@hust.edu.cn

Abstract

Random invariant manifolds and foliations play an important role in the study of the qualitative dynamical behaviors for nonlinear stochastic partial differential equations. In a general way, these random objects are difficult to be visualized geometrically or computed numerically. The current work provides a perturbation approach to approximate these random invariant manifolds and foliations. After briefly discussing the existence of random invariant manifolds and foliations for a class of stochastic systems driven by additive noises, the corresponding Wong-Zakai type of convergence result in path-wise sense is established.

☆ This work is partially supported by Mathematical Tianyuan Foundation of China grant (11126306) and the Fundamental Research Funds for the Central Universities (SCUEC: CZQ17005, CZP17018, CZW15124), also partially supported by the Nature Science Foundation of Jiangsu Province grant (BK20130170) and the National Nature Science Foundation of China grants (11501560,11526196,11526195).

* Corresponding author.

Download English Version:

https://daneshyari.com/en/article/5774660

Download Persian Version:

https://daneshyari.com/article/5774660

Daneshyari.com