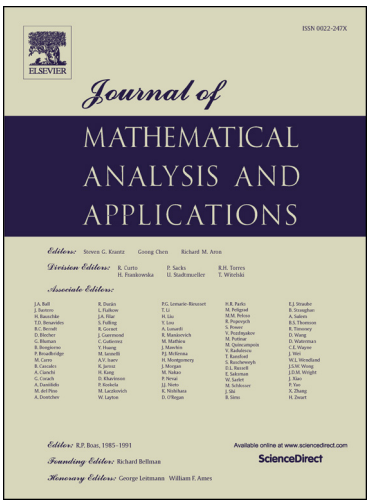
Accepted Manuscript



Strong convergence for explicit space-time discrete numerical approximation methods for stochastic Burgers equations

Arnulf Jentzen, Diyora Salimova, Timo Welti

PII: S0022-247X(18)30773-X
DOI: https://doi.org/10.1016/j.jmaa.2018.09.032
Reference: YJMAA 22552

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

Received date: 7 December 2017

Please cite this article in press as: A. Jentzen et al., Strong convergence for explicit space-time discrete numerical approximation methods for stochastic Burgers equations, *J. Math. Anal. Appl.* (2018), https://doi.org/10.1016/j.jmaa.2018.09.032

Strong convergence for explicit space-time discrete numerical approximation methods for stochastic Burgers equations

Arnulf Jentzen, Diyora Salimova, and Timo Welti
ETH Zürich (Switzerland)

September 18, 2018

Abstract

In this paper we propose and analyze explicit space-time discrete numerical approximations for additive space-time white noise driven stochastic partial differential equations (SPDEs) with non-globally monotone nonlinearities such as the stochastic Burgers equation with space-time white noise. The main result of this paper proves that the proposed explicit space-time discrete approximation method converges strongly to the solution process of the stochastic Burgers equation with space-time white noise. To the best of our knowledge, the main result of this work is the first result in the literature which establishes strong convergence for a space-time discrete approximation method in the case of the stochastic Burgers equations with space-time white noise.

Keywords: Strong convergence; stochastic Burgers equation; numerical approximation; stochastic partial differential equation; SPDE

Contents