

Zeitschrift: Helvetica Physica Acta
Band: 69 (1996)
Heft: 2

Buchbesprechung: Stochastic partial differential equations : a modeling, white noise functional analysis approach [H. Holden; B.Oksendal; J. Uboe]
Autor: [s.n.]

Nutzungsbedingungen

Die ETH-Bibliothek ist die Anbieterin der digitalisierten Zeitschriften auf E-Periodica. Sie besitzt keine Urheberrechte an den Zeitschriften und ist nicht verantwortlich für deren Inhalte. Die Rechte liegen in der Regel bei den Herausgebern beziehungsweise den externen Rechteinhabern. Das Veröffentlichen von Bildern in Print- und Online-Publikationen sowie auf Social Media-Kanälen oder Webseiten ist nur mit vorheriger Genehmigung der Rechteinhaber erlaubt. [Mehr erfahren](#)

Conditions d'utilisation

L'ETH Library est le fournisseur des revues numérisées. Elle ne détient aucun droit d'auteur sur les revues et n'est pas responsable de leur contenu. En règle générale, les droits sont détenus par les éditeurs ou les détenteurs de droits externes. La reproduction d'images dans des publications imprimées ou en ligne ainsi que sur des canaux de médias sociaux ou des sites web n'est autorisée qu'avec l'accord préalable des détenteurs des droits. [En savoir plus](#)

Terms of use

The ETH Library is the provider of the digitised journals. It does not own any copyrights to the journals and is not responsible for their content. The rights usually lie with the publishers or the external rights holders. Publishing images in print and online publications, as well as on social media channels or websites, is only permitted with the prior consent of the rights holders. [Find out more](#)

Download PDF: 07.08.2025

ETH-Bibliothek Zürich, E-Periodica, <https://www.e-periodica.ch>

PA • Probability and Its Applications

H. Holden, Norwegian Inst. of Technology, Trondheim, Norway /

B. Oksendal, University of Oslo, Norway /

J. Uboe / T. Zhang, Strod/Haugesund College, Norway

Stochastic Partial Differential Equations

A Modeling, White Noise Functional Analysis Approach

1996. Approx. 231 pages. Hardcover

DM 118.-/öS 862.-/sFr. 98.-

ISBN 3-7643-3928-4

Stochastic methods have become increasingly important in the analysis of a broad range of phenomena in natural sciences and economics. Many processes are described by differential equations where some of the parameters and/or the initial data are not known with complete certainty, due to lack of information, uncertainty in the measurements, or incomplete knowledge of the mechanisms themselves. To compensate for this lack of information one introduces stochastic noise in the equations, either in the parameters or in the initial data. This results in stochastic differential equations.

First some of the mathematical background is discussed to provide the necessary tools to study several different stochastic partial differential equations. The techniques are mainly from functional analysis. The Wiener-Itô chaos expansion as well as the Itô/Skorohod integrals are developed in this setting, and properties of the Wick product and the Hermite transform are proved. The first applications are given to stochastic ordinary differential equations, e.g., the Volterra equation.

The main emphasis of the book is on stochastic partial differential equations. First the stochastic Poisson equation and the stochastic transport equation are discussed. Next, the authors consider the stochastic Schrödinger equation as well as the stochastic heat equation. The nonlinear Burgers' equation with a stochastic source is discussed, and finally the stochastic pressure equation, as well as other important equations are treated. The white noise approach often allows for solutions given by explicit formulas in terms of expectations of certain auxiliary processes.

The noise in the above examples are all of Gaussian white noise type. But in the end the authors also show how to adapt the analysis to SPDEs involving noise of Poissonian type.

Prices are subject to change without notice. 8/96

For orders originating from all over
the world except USA and Canada:
Birkhäuser Verlag AG
P.O. Box 133
CH-4010 Basel / Switzerland
FAX: +41 / 61 / 205 07 92
e-mail: farnik@birkhauser.ch

For orders originating in the USA
or Canada:
Birkhäuser
333 Meadowlands Parkway
USA-Secaucus, NJ 07094-2491
FAX: +1 201 348 4033
e-mail: orders@birkhauser.com

Birkhäuser



Birkhäuser Verlag AG
Basel · Boston · Berlin