



# Controllability of Partial Differential Equations Governed by Multiplicative Controls

By Alexander Y. Khapalov

Springer-Verlag GmbH Mai 2010, 2010. Taschenbuch. Book Condition: Neu. 237x158x20 mm. Neuware - In a typical mathematical model of a controlled distributed parameter process one usually finds either boundary or internal locally distributed controls to serve as the means to describe the effect of external actuators on the process at hand. However, these classical controls, entering the model equations as additive terms, are not suitable to deal with a vast array of processes that can change their principal intrinsic properties due to the control actions. Important examples here include (but not limited to) the chain reaction-type processes in biomedical, nuclear, chemical and financial applications, which can change their (reaction) rate when certain catalysts are applied, and the so-called smart materials, which can, for instance, alter their frequency response. The goal of this monograph is to address the issue of global controllability of partial differential equations in the context of multiplicative (or bilinear) controls, which enter the model equations as coefficients. The mathematical models of our interest include the linear and nonlinear parabolic and hyperbolic PDEs, the Schrödinger equation, and coupled hybrid nonlinear distributed parameter systems associated with the swimming phenomenon. Pullman, WA, USA Alexander Khapalov January 2010 vii Preface This monograph developed from the research conducted in 2001-2009...

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