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This book provides a direct and comprehensive introduction to theoretical and numerical concepts in the emerging field of optimal control of partial differential equations (PDEs) under uncertainty. The main objective of the book is to offer graduate students and researchers a smooth transition from optimal control of deterministic PDEs to optimal control of random PDEs. Coverage includes uncertainty modelling in control problems, variational formulation of PDEs with random inputs, robust and risk-averse formulations of optimal control problems, existence theory and numerical resolution methods. The exposition focusses on the entire path, starting from uncertainty modelling and ending in the practical implementation of numerical schemes for the numerical approximation of the considered problems. To this end, a selected number of illustrative examples are analysed in detail throughout the book. Computer codes, written in MatLab, are provided for all these examples. This book is addressed to graduate students and researches in Engineering, Physics and Mathematics who are interested in optimal control and optimal design for random partial differential equations.
