

<<经典数学物理中的偏微分方程>>

图书基本信息

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内容概要

The unique characteristic of this book is that it considers the theory of partial differential equations in mathematical physics as the language of continuous processes, that is to say, as an interdisciplinary science that treats the hierarchy of mathematical phenomena as reflections of their physical counterparts. Special attention is drawn to tracing the development of these mathematical phenomena in different natural sciences, with examples drawn from continuum mechanics, electrodynamics, transport phenomena, thermodynamics, and chemical kinetics. At the same time, the authors trace the interrelation between the different types of problems elliptic, parabolic, and hyperbolic - as the mathematical counterparts of stationary and evolutionary processes. This interrelation is traced through study of the asymptotics of the solutions of the respective initial boundaryvalue problems both with respect to time and the governing parameters of the problem. This combination of mathematical comprehensiveness and natural scientific motivation represents a step forward in the presentation of the classical theory of PDEs, one that will be appreciated by both graduate students and researchers alike.

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