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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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书籍目录

PrefaceChapter 1.IntroductionChapter 2. Typical equations of mathematical physics. Boundary conditionsChapter 3. Cauchy problem for first-order partial differential equationsChapter 4. Classification of second-order partial differential equations with linear principal part. Elements of the theory of characteristics Chapter 5. Cauchy and mixed problems for the wave equation in R1. Method of traveling wavesChapter 6. Cauchy and Goursat problems for a second-order linear hyperbolic equation with two independent variables. Riemann''s methodChapter 7. Cauchy problem for a 2-dimensional wave equation. The Volterra-D''AdhemarsolutionChapter 8. Cauchy problem for the wave equation in Rs. Methods of averaging and descent. Huygens''s principleChapter 9. Basic properties of harmonic functionsChapter 10. Green''s functionsChapter 11. Sequences of harmonic functions. Perron's theorem. Schwarzalternating methodChapter 12. Outer boundary-value problems. Elements of potential theoryChapter 13. Cauchy problem for heat-conduction equationChapter 14. Maximum principle for parabolic equationsChapter 15. Application of Green''s formulas. Fundamental identity. Green's functions for Fourier equation Chapter 16. Heat potentials Chapter 17. Volterra integral equations and their application to solution of boundary-value problems in heat-conduction theoryChapter 18. Sequences of parabolic functionsChapter 19. Fourier method for bounded regionsChapter 20. Integral transform method in unbounded regionsChapter 21. Asymptotic expansions. Asymptotic solution of boundary-value problemsAppendix ReferencesIndex

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