

<<经典数学物理方程>>

图书基本信息

书名：<<经典数学物理方程>>

13位ISBN编号：9787030168320

10位ISBN编号：7030168321

出版时间：2006-7

出版时间：科学出版社

作者：谢鸿政/国别：中国大陆

页数：254

字数：311000

版权说明：本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问：<http://www.tushu007.com>

## <<经典数学物理方程>>

### 内容概要

本书是数学物理方程课程的英文教材，共10章，内容包括：绪论、数学模型与定解问题、二阶线性偏微分方程的分类和化简、特征线积分法、分离变量法、本征值问题与特殊函数、高维边值问题、积分变换法、调和函数的基本性质、格林函数及其应用等。本书可作为高等学校理工科(非数学专业)本科生和研究生的公共专业或技术基础课英文教材，也可供科技工作者参考。

## 书籍目录

Chapter 1 Introduction 1.1 Equations of mathematical physics 1.2 Basic concept and definition 1.3 Linear operator Exercises  
 Chapter 2 Mathematical models and problems for defining solutions 2.1 Typical equations 2.2 String oscillation 2.3 Membrane oscillation 2.4 Heat conduction in solid 2.5 Gravitation potential 2.6 The conditions and problems for defining solutions 2.7 Principle of superposition  
 Chapter 3 Classification and simplification for linear partial differential equations of second order 3.1 Linear second order partial differential equations with two variables 3.2 Simplification and standard forms 3.3 Examples Exercises  
 Chapter 4 Integral method on characteristics 4.1 D'Alembert formula of Cauchy problem for string oscillation 4.2 Small oscillations of semi-infinite and finite strings with rigidly fixed or free ends, method of prolongation 4.3 Three-dimensional wave equation 4.4 The method for descending dimension 4.5 Cauchy problem for non-homogeneous wave equation 4.6 Integral method on characteristics for second order hyperbolic equations with two variables Exercises  
 Chapter 5 The method of separating variables on finite region 5.1 Separation of variables 5.2 The process by separation of variables for solving mixed problem on string oscillation 5.3 The application of the method on separating variables 5.4 Non-homogeneous problems 5.5 Uniqueness of the solutions for two mixed problems Exercises  
 Chapter 6 Eigenvalue problems and special functions 6.1 Sturm-Liouville problem 6.2 Eigenfunctions 6.3 The boundary value problem of ordinary differential equation and Green function 6.4 The construction of Green function 6.5 Eigenvalue problem and Green function 6.6 Bessel function 6.7 Singular Sturm-Liouville problem 6.8 Legendre function Exercises  
 Chapter 7 Multidimensional boundary value problems 7.1 Dirichlet problem in cube 7.2 Dirichlet problem in cylindrical body 7.3 Boundary value problems in a sphere 7.4 Membrane oscillation on rectangular region 7.5 Heat conduction on rectangular plate 7.6 Wave in three-dimensional cube 7.7 Heat conduction in cube 7.8 The problem on hydrogen atom 7.9 Forced vibration on membrane Exercises  
 Chapter 8 Integral transformations 8.1 Fourier integral transformation 8.2 The properties of Fourier transformation 8.3 Application of Fourier integral transformation 8.4 Laplace integral transformation 8.5 Application of Laplace integral transformation Exercises  
 Chapter 9 Basic properties of harmonic functions 9.1 Convex, linear, and concave functions in  $R^1$  9.2 Superharmonic, harmonic, and subharmonic functions in multidimensional regions 9.3 Hopf lemma and strong maximum principle 9.4 Green formulas, uniqueness theorems 9.5 Integral identity, mean value theorem, inverse mean value theorem  
 Chapter 10 Green function and their application to PDEs 10.1 Definition and main properties concerning Laplace operator 10.2 The method of superposition of sources and sinks 10.3 Poisson integral  
 Supplement Exercises  
 Selected answers for exercises  
 Appendix A  
 Appendix B  
 Appendix C

<<经典数学物理方程>>

版权说明

本站所提供下载的PDF图书仅提供预览和简介，请支持正版图书。

更多资源请访问:<http://www.tushu007.com>