

<<张量计算与应用TENSOR CALCULUS WITH APPLICATIONS>>

图书基本信息

书名：<<张量计算与应用TENSOR CALCULUS WITH APPLICATIONS>>

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内容概要

This textbook presents the foundations of tensor calculus and the elements of tensor analysis. In addition, the authors consider numerous applications of tensors to geometry, mechanics and physics. While developing tensor calculus, the authors emphasize its relationship with linear algebra. Necessary notions and theorems of linear algebra are introduced and proved in connection with the construction of the apparatus of tensor calculus; prior knowledge is not assumed. For simplicity and to enable the reader to visualize concepts more clearly, all exposition is conducted in three-dimensional space. The principal feature of the book is that the authors use mainly orthogonal tensors, since such tensors are important in applications to physics and engineering. With regard to applications, the authors construct the general theory of second-degree surfaces, study the inertia tensor as well as the stress and strain tensors, and consider some problems of crystallophysics. The last chapter introduces the elements of tensor analysis. All notions introduced in the book, and also the obtained results, are illustrated with numerous examples discussed in the text. Each section of the book presents problems (a total over 300 problems are given). Examples and problems are intended to illustrate, reinforce and deepen the presented material. There are answers to most of the problems, as well as hints and solutions to selected problems at the end of the book.

书籍目录

Translator's Introduction Preface to the Russian Edition Chapter 1 Vector Spaces 1.1 Concept of a Vector Space 1.2 Linear Dependence of Vectors 1.3 Dimension and Basis of a Vector Space 1.4 Orthonormal Bases in a Three-Dimensional Space The Scalar Product of Vectors 1.5 The Vector Product and Triple Products of Vectors 1.6 Transformations of Orthonormal Basis. Fundamental Problem of Tensor Calculus 1.7 Some Topics in Three-Dimensional Analytic Geometry Chapter 2 Multilinear Forms and Tensors 2.1 Linear Forms 2.2 Bilinear Forms 2.3 Multilinear Forms. General Definition of a Tensor 2.4 Algebraic Operations on Tensors 2.5 Symmetric and Antisymmetric Tensors Chapter 3 Linear Transformations and Second-Order Tensors 3.1 Linear Transformations 3.2 The Matrix of a Linear Transformation 3.3 The Determinant of the Matrix of a Linear Transformation The Rank of a Matrix 3.4 Linear Transformations and Bilinear Forms 3.5 Multiplication of Linear Transformations and Matrices 3.6 Inverse Linear Transformations and Inverse Matrices 3.7 The Group of Linear Transformations and Its Subgroups Chapter 4 Reduction of the Matrix of Linear Transformation to the Simplest Form 4.1 Eigenvectors and Eigenvalues of a Linear Transformation 4.2 Reduction of the Matrix of Linear Transformation to the Simplest Form in the Case of Distinct Eigenvalues 4.3 Matrix Polynomials and the Hamilton-Cayley Theorem 4.4 Properties of Eigenvectors and Eigenvalues of a Symmetric Linear Transformation 4.5 Diagonalization of the Matrix of a Symmetric Linear Transformation 4.6 Reduction of a Quadratic Form to Canonical Form 4.7 Representation of a Nonsingular Linear Transformation as the Product of a Symmetric Transformation and an Orthogonal Transformation Chapter 5 The General Theory of Second-Degree Surfaces 5.1 General Equation of a Second-Degree Surface 5.2 Reduction of the General Equation of Second-Degree Surfaces to the Simplest Form 5.3 Determination of the Type of Second-Degree Surface by Means of Its Invariants 5.4 Classification of Second-Degree Surfaces 5.5 Application of the Theory of Invariants to Classification of Second-Degree Surfaces 5.6 Central and Noncentral Second-Degree Surfaces 5.7 Examples Chapter 6 Applications of Tensor Calculus to Some Problem of Mechanics and Physics 6.1 The Inertia Tensor 6.2 Properties of Crystals Connected with Second-Order Tensors 6.3 The Stress and Strain Tensors 6.4 Further Properties of Crystals Chapter 7 Foundation of Tensor Analysis Selected Answers and Hints Bibliography Index

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