Brief Introduction To Tensor Algebra

Tensors
Numerical simulations of low-dimensional many-body quantum systems
Introduction to Vectors and Tensors
An Introduction to Algebraic Statistics with Tensors
Microscale Flow and Heat Transfer
Tensor Spaces and Numerical Tensor Calculus
Decomposability of Tensors
A Concise Introduction
Mathematical Methods for Physicists
An Introduction to Clifford Algebras and Spinors
Tensor Categories
Linear and Multilinear Algebra
Tensor Calculus for Engineers and Physicists
The Mathematics of Relativity Theory and Continuum Mechanics
An Introduction to Linear Algebra and Tensors
With Applications to Continuum Mechanics
Knowledge Science, Engineering and Management
Introduction to Algebraic and Constructive Quantum Field Theory
Mathematical Modelling and Flow Physics
Tensor Analysis and Nonlinear Tensor Functions
Introduction to Tensor Products of Banach Spaces
Introduction to Tensor Analysis and the Calculus of Moving Surfaces
5th International Conference, KSEM 2011, Irvine, CA, USA, December 12-14, 2011. Proceedings
A Concise Guide
Tensor Calculus for Physics
Second Edition
An Introduction to Tensors and Group Theory for Physicists
Vector and Tensor Analysis with Applications
Schaums Outline of Tensor Calculus
Introduction to Vector and Tensor Analysis
Introduction to Tensor Network Methods
A Student's Guide to Vectors and Tensors
Geometry and Applications
Spectral Theory and Special Tensors
A Primer in Tensor Analysis and Relativity
Tensors and their Applications
Tensor Analysis on Manifolds
From Vectors to Tensors
Tensor Algebra and Tensor Analysis for Engineers

CARDENAS RILEY

Tensors Springer Science & Business Media
There is a large gap between engineering courses in tensor algebra on one hand, and the treatment of linear transformations within classical linear algebra on the other. This book addresses primarily engineering students with some initial knowledge of matrix algebra. Thereby, mathematical formalism is applied as far as it is absolutely necessary. Numerous exercises provided in the book are accompanied by solutions enabling autonomous study. The last chapters deal with modern developments in the theory of isotropic and anisotropic tensor functions and their applications to continuum mechanics and might therefore be of high interest for PhD-students and scientists working in this area.
Numerical simulations of low-dimensional many-body quantum systems Springer Nature
Is there a vector space whose dimension is the golden ratio? Of course not—the golden ratio is not an integer! But this can happen for generalizations of vector spaces—objects of a tensor category. The theory of tensor categories is a relatively new field of mathematics that generalizes the theory of group representations. It has deep connections with many other fields, including representation theory, Hopf algebras, operator algebras, low-dimensional topology (in particular, knot theory), homotopy theory, quantum mechanics and field theory, quantum computation, theory of motives, etc. This book gives a systematic introduction to this theory and a review of its applications. While giving a detailed overview of general tensor categories, it focuses especially on the theory of finite tensor categories and fusion categories (in particular, braided and modular ones), and discusses the main results about them with proofs. In particular, it shows how the main properties of finite-dimensional Hopf algebras may be derived from the theory of tensor categories. Many important results are presented as a sequence of exercises, which makes the book valuable for students and suitable for graduate courses. Many applications, connections to other areas, additional results, and references are discussed at the end of each chapter.
Introduction to Vectors and Tensors Princeton University Press
Fundamental introduction of absolute differential calculus and for those interested in applications of tensor calculus to mathematical physics and engineering. Topics include spaces and tensors; basic operations in Riemannian space, curvature of

space, more.
An Introduction to Algebraic Statistics with Tensors Cambridge University Press
Second edition of a widely-used textbook providing the first step into general relativity for undergraduate students with minimal mathematical background.
Microscale Flow and Heat Transfer Birkhäuser
Tensors have numerous applications in physics and engineering. There is often a fuzzy haze surrounding the concept of tensor that puzzles many students. The old-fashioned definition is difficult to understand because it is not rigorous; the modern definitions are difficult to understand because they are rigorous but at a cost of being more abstract and less intuitive.The goal of this book is to elucidate the concepts in an intuitive way but without loss of rigor, to help students gain deeper understanding. As a result, they will not need to recite those definitions in a parrot-like manner any more. This volume answers common questions and corrects many misconceptions about tensors. A large number of illuminating illustrations helps the reader to understand the concepts more easily.This unique reference text will benefit researchers, professionals, academics, graduate students and undergraduate students.
Tensor Spaces and Numerical Tensor Calculus Courier Corporation
DIVProceeds from general to special, including chapters on vector analysis on manifolds and integration theory. /div
Decomposability of Tensors Courier Corporation
Tensors, or hypermatrices, are multi-arrays with more than two indices. In the last decade or so, many concepts and results in matrix theory?some of which are nontrivial?have been extended to tensors and have a wide range of applications (for example, spectral hypergraph theory, higher order Markov chains, polynomial optimization, magnetic resonance imaging, automatic control, and quantum entanglement problems). The authors provide a comprehensive discussion of this new theory of tensors. Tensor Analysis: Spectral Theory and Special Tensors is unique in that it is the first book on these three subject areas: spectral theory of tensors; the theory of special tensors, including nonnegative tensors, positive semidefinite tensors, completely positive tensors, and copositive tensors; and the spectral hypergraph theory via tensors.
A Concise Introduction SIAM
DIVTensor theory, applications to dynamics, electricity, elasticity, hydrodynamics, etc. Level is advanced undergraduate. Over 500 solved problems. /div
Mathematical Methods for Physicists Courier Corporation
In this text which gradually develops the tools for formulating and manipulating the field equations of Continuum Mechanics, the mathematics of tensor analysis is introduced in four, well-separated stages, and the physical interpretation and application of vectors and tensors are stressed throughout. This new edition contains more exercises. In addition, the author has appended a section on Differential Geometry.
An Introduction to Clifford Algebras and Spinors Springer Science & Business Media
Eminently readable, completely elementary treatment begins with linear spaces and ends with analytic geometry, covering multilinear forms, tensors, linear transformation, and more. 250 problems, most with hints and answers. 1972 edition.
Tensor Categories Springer Nature
Tensors are ubiquitous in the sciences. The geometry of tensors is both a powerful tool for extracting information from data sets, and a beautiful subject in its own right. This book has three intended uses: a classroom textbook, a reference work for researchers in the sciences, and an account of classical and modern results in (aspects of) the theory that will be of interest to researchers in geometry. For classroom use, there is a modern introduction to multilinear algebra and to the geometry and representation theory needed to study tensors, including a large number of exercises. For researchers in the sciences, there is information on tensors in table format for easy reference and a summary of the state of the art in elementary language. This is the first book containing many classical results regarding tensors. Particular applications treated in the book include the complexity of matrix multiplication, P versus NP, signal processing, phylogenetics, and algebraic statistics. For geometers, there is material on secant varieties, G-varieties, spaces with finitely many orbits and how these objects arise in applications, discussions of numerous open questions in geometry arising in applications, and expositions of advanced topics such as the proof of the Alexander-Hirschowitz theorem and of the Weyman-Kempf method for computing syzygies.
Linear and Multilinear Algebra McGraw-Hill Education
To Volume 1 This work represents our effort to present the basic concepts of vector and tensor analysis. Volume 1 begins with a brief discussion of algebraic structures followed by a rather detailed discussion of the algebra of vectors and tensors. Volume 2 begins with a discussion of Euclidean manifolds, which leads to a development of the analytical and geometrical aspects of vector and tensor fields. We have not included a discussion of general differentiable manifolds. However, we have included a chapter on vector and tensor fields defined on hypersurfaces in a Euclidean manifold. In preparing this two-volume work, our intention was to present to engineering and science students a modern introduction to vectors and tensors. Traditional courses on applied mathematics have emphasized problem-solving techniques rather than the systematic development of concepts. As a result, it is possible for such courses to become terminal mathematics courses rather than courses which equip the student to develop his or her understanding further.
Tensor Calculus for Engineers and Physicists MDPI
This text is designed for an intermediate-level, two-semester undergraduate course in mathematical physics. It provides an accessible account of most of the current, important mathematical tools required in physics these days. It is assumed that the reader has an adequate preparation in general physics and calculus. The book bridges the gap between an introductory physics course and more advanced courses in classical mechanics, electricity and magnetism, quantum mechanics, and thermal and statistical physics. The text contains a large number of worked examples to illustrate the mathematical techniques developed and to show their relevance to physics. The book is designed primarily for undergraduate physics majors, but could also be used by students in other subjects, such as engineering, astronomy and mathematics.
The Mathematics of Relativity Theory and Continuum Mechanics Springer
Concise, readable text ranges from definition of vectors and discussion of algebraic operations on vectors to the concept of tensor and algebraic operations on tensors. Worked-out problems and solutions. 1968 edition.
An Introduction to Linear Algebra and Tensors Springer Nature
This undergraduate textbook provides a simple, concise introduction to tensor algebra and analysis, as well as special and general relativity. With a plethora of examples, explanations, and exercises, it forms a well-rounded didactic text that will be useful for any related course. The book is divided into three main parts, all based on lecture notes that have been refined for classroom teaching over the past two decades. Part I provides students with a comprehensive overview of tensors. Part II links the very

introductory first part and the relatively advanced third part, demonstrating the important intermediate-level applications of tensor analysis. Part III contains an extended discussion of general relativity, and includes material useful for students interested primarily in quantum field theory and quantum gravity. Tailored to the undergraduate, this textbook offers explanations of technical material not easily found or detailed elsewhere, including an understandable description of Riemann normal coordinates and conformal transformations. Future theoretical and experimental physicists, as well as mathematicians, will thus find it a wonderful first read on the subject.

With Applications to Continuum Mechanics Springer Nature

The ideal review for your tensor calculus course More than 40 million students have trusted Schaum's Outlines for their expert knowledge and helpful solved problems. Written by renowned experts in their respective fields, Schaum's Outlines cover everything from math to science, nursing to language. The main feature for all these books is the solved problems. Step-by-step, authors walk readers through coming up with solutions to exercises in their topic of choice. 300 solved problems Coverage of all course fundamentals Effective problem-solving techniques Complements or supplements the major logic textbooks Supports all the major textbooks for tensor calculus courses

Knowledge Science, Engineering and Management Springer Science & Business Media

This textbook deals with tensors that are treated as vectors. Coverage details such new tensor concepts as the rotation of tensors, the transposer tensor, the eigentensors, and the permutation tensor structure. The book covers an existing gap between the classic theory of tensors and the possibility of solving tensor problems with a computer. A complementary computer package, written in Mathematica, is available through the Internet.

Introduction to Algebraic and Constructive Quantum Field Theory

Introduction to Tensor Analysis and the Calculus of Moving Surfaces

The Book Is Written Is In Easy-To-Read Style With Corresponding Examples. The Main Aim Of This Book Is To Precisely Explain The Fundamentals Of Tensors And Their Applications To Mechanics, Elasticity, Theory Of Relativity, Electromagnetic, Riemannian Geometry And Many Other Disciplines Of Science And Engineering, In A Lucid Manner. The Text Has Been Explained Section Wise, Every Concept Has Been Narrated In The Form Of Definition, Examples And Questions Related To The Concept Taught. The Overall Package Of The Book Is Highly Useful And Interesting For The People Associated With The Field.

Mathematical Modelling and Flow Physics American Mathematical Soc.

This textbook provides a rigorous approach to tensor manifolds in several aspects relevant for Engineers and Physicists working in industry or academia. With a thorough, comprehensive, and unified presentation, this book offers insights into several topics of tensor analysis, which covers all aspects of n-dimensional spaces. The main purpose of this book is to give a self-contained yet simple, correct and comprehensive mathematical explanation of tensor calculus for undergraduate and graduate students and for professionals. In addition to many worked problems, this book features a selection of examples, solved step by step. Although no emphasis is placed on special and particular problems of Engineering or Physics, the text covers the fundamentals of these fields of science. The book makes a brief introduction into the basic concept of the tensorial formalism so as to allow the reader to make a quick and easy review of the essential topics that enable having the grounds for the subsequent themes, without needing to resort to other bibliographical sources on tensors. Chapter 1 deals with Fundamental Concepts about tensors and chapter 2 is devoted to the study of covariant, absolute and contravariant derivatives. The chapters 3 and 4 are dedicated to the Integral Theorems and Differential Operators, respectively. Chapter 5 deals with Riemann Spaces, and finally the chapter 6 presents a concise study of the Parallelism of Vectors. It also shows how to solve various problems of several particular manifolds.

Tensor Analysis and Nonlinear Tensor Functions Courier Corporation

Here is a modern introduction to the theory of tensor algebra and tensor analysis. It discusses tensor algebra and introduces differential manifold. Coverage also details tensor analysis, differential forms, connection forms, and curvature tensor. In addition, the book investigates Riemannian and pseudo-Riemannian manifolds in great detail. Throughout, examples and problems are furnished from the theory of relativity and continuum mechanics.