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A First Look At Perturbation Theory Dover Books O ***2022-05-18***

SWANSON HAIDEN

Quantum Physics in One Dimension Oxford University Press
This textbook develops a coherent view of differential equations by progressing through a series of typical examples in science and engineering that arise as mathematical models. All steps of the modeling process are covered: formulation of a mathematical model; the development and use of mathematical concepts that lead to constructive solutions; validation of the solutions; and consideration of the consequences. The volume engages students in thinking mathematically, while emphasizing the power and relevance of mathematics in science and engineering. There are just a few guidelines that bring coherence to the construction of solutions as the book progresses through ordinary to partial differential equations using examples from mixing, electric circuits, chemical reactions and transport processes, among others. The development of differential equations as mathematical models and the construction of their solution is placed center stage in this volume.
Conformal Mapping DIANE Publishing
This text was designed as a short introductory course to give students the tools of vector algebra and calculus, as well as a brief glimpse into the subjects' manifold applications. 1957 edition. 86 figures.
Strengthening Deep Neural Networks Cambridge University Press
A textbook presenting the theory and underlying techniques of perturbation methods in a manner suitable for senior undergraduates from a broad range of disciplines.
The Primordial Density Perturbation Oxford University Press
Complete and comprehensive introduction for physics graduate students just entering the field, and an authoritative reference for researchers.
Hydrodynamics Courier Dover Publications
The Wiley Classics Library consists of selected books that have become recognized classics in their respective

fields. With these new unabridged and inexpensive editions, Wiley hopes to extend the life of these important works by making them available to future generations of mathematicians and scientists. Currently available in the Series: T. W. Anderson The Statistical Analysis of Time Series T. S. Arthanari & Yadolah Dodge Mathematical Programming in Statistics Emil Artin Geometric Algebra Norman T. J. Bailey The Elements of Stochastic Processes with Applications to the Natural Sciences Robert G. Bartle The Elements of Integration and Lebesgue Measure George E. P. Box & Norman R. Draper Evolutionary Operation: A Statistical Method for Process Improvement George E. P. Box & George C. Tiao Bayesian Inference in Statistical Analysis R. W. Carter Finite Groups of Lie Type: Conjugacy Classes and Complex Characters R. W. Carter Simple Groups of Lie Type William G. Cochran & Gertrude M. Cox Experimental Designs, Second Edition Richard Courant Differential and Integral Calculus, Volume I RIchard Courant Differential and Integral Calculus, Volume II Richard Courant & D. Hilbert Methods of Mathematical Physics, Volume I Richard Courant & D. Hilbert Methods of Mathematical Physics, Volume II D. R. Cox Planning of Experiments Harold S. M. Coxeter Introduction to Geometry, Second Edition Charles W. Curtis & Irving Reiner Representation Theory of Finite Groups and Associative Algebras Charles W. Curtis & Irving Reiner Methods of Representation Theory with Applications to Finite Groups and Orders, Volume I Charles W. Curtis & Irving Reiner Methods of Representation Theory with Applications to Finite Groups and Orders, Volume II Cuthbert Daniel Fitting Equations to Data: Computer Analysis of Multifactor Data, Second Edition Bruno de Finetti Theory of Probability, Volume I Bruno de Finetti Theory of Probability, Volume 2 W. Edwards Deming Sample Design in Business Research

Asymptotic Expansions of Integrals Oxford University Press
Mathematics of Computing -- Numerical Analysis.

An Introduction to the Approximation of Functions University of Chicago Press
As deep neural networks (DNNs) become increasingly common in real-world applications, the potential to deliberately "fool" them with data that wouldn’t trick a human presents a new attack vector. This practical book examines real-world scenarios where DNNs—the algorithms intrinsic to much of AI—are used daily to process image, audio, and video data. Author Katy Warr considers attack motivations, the risks posed by this adversarial input, and methods for increasing AI robustness to these attacks. If you’re a data scientist developing DNN algorithms, a security architect interested in how to make AI systems more resilient to attack, or someone fascinated by the differences between artificial and biological perception, this book is for you. Delve into DNNs and discover how they could be tricked by adversarial input Investigate methods used to generate adversarial input capable of fooling DNNs Explore real-world scenarios and model the adversarial threat Evaluate neural network robustness; learn methods to increase resilience of AI systems to adversarial data Examine some ways in which AI might become better at mimicking human perception in years to come

Probability Theory Cambridge University

Press
The Jorge Andr Swieca Summer School is a traditional school in Latin America well known for the high level of its courses and lecturers. This book contains lectures on forefront areas of high energy physics, such as collider physics, neutrino phenomenology, noncommutative field theory, string theory and branes.
Perturbations Springer Science & Business Media
Perturbation Theory: Advances in Research and Applications begins with a deliberation on the development of a formalism of the Exchange perturbation theory (EPT) that accounts for the general identity principle of electrons that belong to different atomic centres. The possible applications of the theory concerning scattering and collision problems are discussed, and the authors apply the TDEPT to the description of the positron scattering on a Lithium atom as an example. Next, spin fluctuations in metallic multiband systems are discussed, including how to calculate the effect of itinerant spin excitations on the electronic properties and formulate a theory of spin fluctuation-induced superconductivity. The function of spin-orbit coupling is emphasized. Following this, the authors review how, governed by chiral symmetry, the long- and intermediate-range parts of the NN potential unfold order by order, proceeding up to sixth order where convergence is achieved. Perturbative and nonperturbative approaches to nuclear amplitude are discussed, including the implications for renormalization.
Continuing, this book presents proof of the good convergence properties of the new expansions on mathematical models that simulate the physical polarization function for light quarks and its derivative (the Adler function), in various prescriptions of renormalization-group summation. An overview of the calculation of one-loop corrections to the baryon axial vector current in the large-Nc heavy baryon chiral perturbation theory is offered, where Nc is the number of color charges. The matrix elements of the space components of the renormalization of the baryon axial vector current between SU(6) symmetric states yield the values of the axial vector couplings.
Mathematical Methods in Quantum Mechanics Cambridge University Press
Following its 1963 publication, this volume served as the standard advanced text in probability theory. Suitable for undergraduate and graduate students, the treatment includes extensive introductory material.
Renormalization Methods Courier Corporation
This introductory graduate text is based on a graduate course the author has taught repeatedly over the last ten years to students in applied mathematics, engineering sciences, and physics. Each chapter begins with an introductory development involving ordinary differential equations, and goes on to cover such traditional topics as boundary layers and multiple scales. However, it also contains material arising from current research interest, including homogenisation, slender body theory, symbolic computing, and discrete equations. Many of the excellent exercises are derived from problems of up-to-date research and are drawn from a wide range of application areas.
Advanced Mathematical Methods for Scientists and Engineers I Courier Dover Publications

Surveys and summaries of the latest research in numerical analysis, optimization, computer algebra and scientific computing.

Dark Energy Courier Corporation

Detailed treatment covers existence and uniqueness of a solution of the initial value problem, properties of solutions, properties of linear systems, stability of nonlinear systems, and two-dimensional systems. 1962 edition.

Perturbation of Banach Algebras Courier Corporation

This volume introduces the basic mathematical tools behind conformal mapping, describes advances in technique, and illustrates a broad range of applications. 1991 edition. Includes 247 figures and 38 tables.

Advances in Nuclear Physics Courier Corporation

Perturbations: Theory and Methods gives a thorough introduction to both regular and singular perturbation methods for algebraic and differential equations. Unlike most introductory books on the subject, this one distinguishes between formal and rigorous asymptotic validity, which are commonly confused in books that treat perturbation theory as a bag of heuristic tricks with no foundation. The meaning of "uniformity" is carefully explained in a variety of contexts. All standard methods, such as rescaling, multiple scales, averaging, matching, and the WKB method are covered, and the asymptotic validity (in the rigorous sense) of each method is carefully proved. First published in 1991, this book is still useful today because it is an introduction. It combines perturbation results with those known through other methods. Sometimes a geometrical result (such as the existence of a periodic solution) is rigorously deduced from a perturbation result, and at other times a knowledge of the geometry of the solutions is used to aid in the selection of an effective perturbation method. Dr. Murdock's approach differs from other introductory texts because he attempts to present perturbation theory as a natural part of a larger whole, the mathematical theory of differential equations. He explores the meaning of the results and their connections to other ways of studying the same problems.

A Course in Advanced Calculus Princeton University Press

Quantum mechanics and the theory of operators on Hilbert space have been deeply linked since their beginnings in the early twentieth century. States of a quantum system correspond to certain elements of the configuration space and observables correspond to certain operators on the space. This book is a brief, but self-contained, introduction to the mathematical methods of quantum mechanics, with a view towards applications to Schrodinger operators. Part 1 of the book is a concise introduction to the spectral theory of unbounded operators. Only those topics that will be needed for later applications are covered. The spectral theorem is a central topic in this approach and is introduced at an early stage. Part 2 starts with the free Schrodinger equation and computes the free resolvent and time evolution. Position, momentum, and angular momentum are discussed via algebraic methods. Various mathematical methods are developed, which are then used to compute the spectrum of the hydrogen atom. Further topics include the nondegeneracy of the ground state, spectra of atoms, and scattering theory. This book serves as a

self-contained introduction to spectral theory of unbounded operators in Hilbert space with full proofs and minimal prerequisites: Only a solid knowledge of advanced calculus and a one-semester introduction to complex analysis are required. In particular, no functional analysis and no Lebesgue integration theory are assumed. It develops the mathematical tools necessary to prove some key results in nonrelativistic quantum mechanics. Mathematical Methods in Quantum Mechanics is intended for beginning graduate students in both mathematics and physics and provides a solid foundation for reading more advanced books and current research literature. It is well suited for self-study and includes numerous exercises (many with hints).

Perturbation Methods Courier Corporation
Graduate students receive a stimulating introduction to analytical approximation techniques for solving differential equations in this text, which introduces scientifically significant problems and indicates useful solutions. 1966 edition.

Particles and Fields Cambridge University Press
This text fills a gap between undergraduate and more advanced texts on quantum field theory. It covers a range of renormalization methods with a clear physical interpretation, proceeds to the epsilon-expansion and ends with the first-order corrections to critical exponents beyond mean-field theory.

Acoustic Eigenvalues of a Quasispherical Resonator: Second Order Shape Perturbation Theory for Arbitrary Modes Courier Dover Publications
An excellent undergraduate text examines sets and structures, limit and continuity in En, measure and integration, differentiable mappings, sequences and series, applications of improper integrals, more. Problems with tips and solutions for some.

Differential Equations as Models in Science and Engineering Springer
A clear, practical and self-contained presentation of the methods of asymptotics and perturbation theory for obtaining approximate analytical solutions to differential and difference equations. Aimed at teaching the most useful insights in approaching new problems, the text avoids special methods and tricks that only work for particular problems. Intended for graduates and advanced undergraduates, it assumes only a limited familiarity with differential equations and complex variables. The presentation begins with a review of differential and difference equations, then develops local asymptotic methods for such equations, and explains perturbation and summation theory before concluding with an exposition of global asymptotic methods. Emphasizing applications, the discussion stresses care rather than rigor and relies on many well-chosen examples to teach readers how an applied mathematician tackles problems. There are 190 computer-generated plots and tables comparing approximate and exact solutions, over 600 problems of varying levels of difficulty, and an appendix summarizing the properties of special functions.