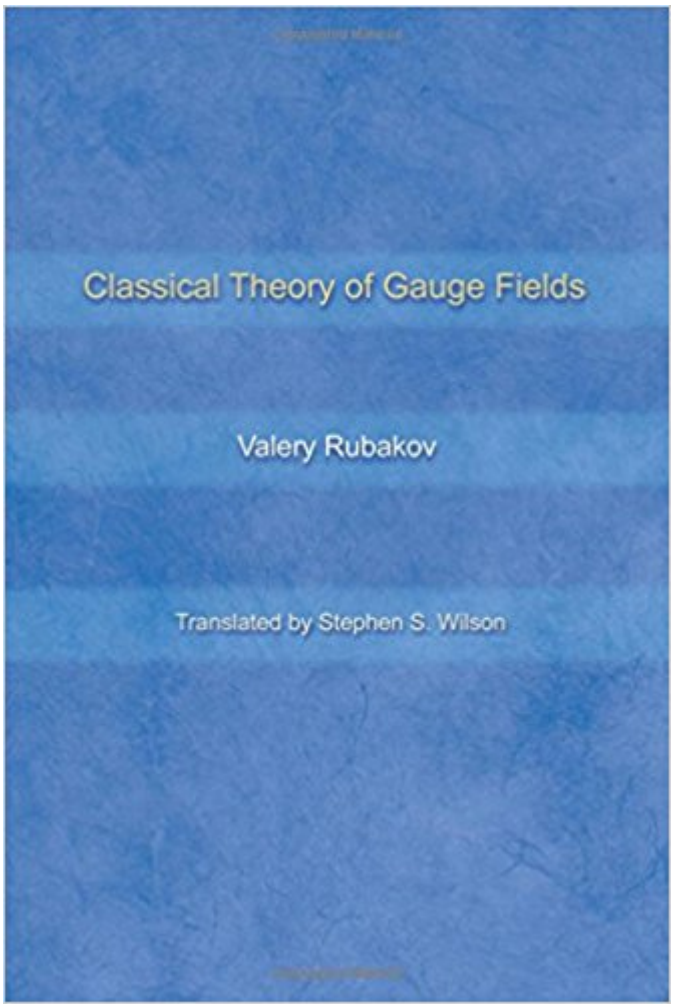
Classical Theory Of Gauge Fields



Synopsis

Based on a highly regarded lecture course at Moscow State University, this is a clear and systematic introduction to gauge field theory. It is unique in providing the means to master gauge field theory prior to the advanced study of quantum mechanics. Though gauge field theory is typically included in courses on quantum field theory, many of its ideas and results can be understood at the classical or semi-classical level. Accordingly, this book is organized so that its early chapters require no special knowledge of quantum mechanics. Aspects of gauge field theory relying on quantum mechanics are introduced only later and in a graduated fashion--making the text ideal for students studying gauge field theory and quantum mechanics simultaneously. The book begins with the basic concepts on which gauge field theory is built. It introduces gauge-invariant Lagrangians and describes the spectra of linear perturbations, including perturbations above nontrivial ground states. The second part focuses on the construction and interpretation of classical solutions that exist entirely due to the nonlinearity of field equations: solitons, bounces, instantons, and sphalerons. The third section considers some of the interesting effects that appear due to interactions of fermions with topological scalar and gauge fields. Mathematical digressions and numerous problems are included throughout. An appendix sketches the role of instantons as saddle points of Euclidean functional integral and related topics. Perfectly suited as an advanced undergraduate or beginning graduate text, this book is an excellent starting point for anyone seeking to understand gauge fields.

Book Information

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Customer Reviews

"Classical Theory of Gauge Fields is indeed . . . unique . . . and without alternative for all those who want to immerse themselves in this particular area of theoretical physics."--H. Hogreve, Mathematical Reviews

"This thorough, clear, and readable book is an important addition to the available literature on solitons in field theory. The inclusion of materials on semiclassical quantization of field theories and on the relevant mathematics, in addition to the sections covering classical gauge fields, broadens its appeal. The book will be very useful In advanced undergraduate as well as graduate courses on field theory. It will also serve as a modern review and reference for working theoretical physicists."--Igor Klebanov, Princeton University "This is an excellent text on field theory. The material is well thought out, well organized, well presented, and amply supplemented with problems."--Dirk ter Haar, author of Master of Modern Physics "Professor Rubakov is an outstanding researcher and an exceptionally clear lecturer, an unusual combination that shines through in this illuminating text. Students and active researchers can all learn something from this well-organized and insightful text, which is written so as to be widely accessible but authoritative."--John Bahcall, Institute for Advanced Study

This book is very valuable for anyone trying to access gauge theory. It will also help you to see the proximity of gauge theory and gtr and qft. It very pedagocical and easy to read. You will find aha:s on almost every other page. Fantastic.If all scientific books were written in this way.

Very readable book for QFT learner. If you want to familiar with some group and symmetry aspect in QFT, I suggest use this book as a starter.

This work, which is not so well-known, gives a goodintroduction in gauge field theory. Starting from scalarfields quickly more advanced subjects such as magnetic monopoles, the higgs mechanism and spontaneous symmetry breaking are discussed.The work contains nice overviews of the mathematics of Lie groups and Lie algebras and has a number of useful exercises.

If you are reading this review you are probably familiar with field theory and learned it in a quantum field theory class or book. If not go ahead and read THIS book, it is a must BEFORE a QFT a class. I wish I had it a few years ago, I would learn QFT much easier. Still it clarified a lot of things and

recommended for every theoretical physics student. You will at least recognize what is related to quantum aspects and what is not.

Classical Theory of Gauge Fields Gauge Theories in Particle Physics, Vol. 2: Non-Abelian Gauge Theories: QCD and the Electroweak Theory (Volume 1) The Classical Theory of Fields, Fourth Edition: Volume 2 (Course of Theoretical Physics Series) The Dawning of Gauge Theory Elementary Primer For Gauge Theory, An Gauge Field Theory and Complex Geometry (Grundlehren der mathematischen Wissenschaften) Gauge Theory of Elementary Particle Physics: Problems and Solutions Mrs. Fields Cookie Book: 100 Recipes from the Kitchen of Mrs. Fields Crystals: The Ultimate Guide To: Energy Fields, Auras, Chakras and Emotional Healing (Aura, Healing Stones, Crystal Energy, Crystal Healing, Energy Fields, Emotional Healing, Gemstone) Fields Virology (Knipe, Fields Virology)-2 Volume Set Oahu's Narrow-Gauge Navy Rail (Images of Rail) Colorado and Southern Railway: Clear Creek Narrow Gauge Colorado Narrow Gauge 2018 Calendar Colorado Narrow Gauge 2016 Calendar 11x14 Colorado Narrow Gauge 2015 Calendar (Classic Rail Images) Garden Railway Manual: The Complete Step-By-Step Guide to Building and Running a Narrow-Gauge Garden Railway Gauge Theories in Particle Physics: A Practical Introduction, Fourth Edition - 2 Volume set Gauge Theories in Particle Physics, Second Edition (Graduate Student Series in Physics) From Gravity to Thermal Gauge Theories: The AdS/CFT Correspondence (Lecture Notes in Physics) The God Theory: Universes, Zero-Point Fields, and What's Behind It All