Classical Theory of Gauge Fields

By Valery Rubakov

Classical Theory of Gauge Fields By Valery Rubakov

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.

Download Classical Theory of Gauge Fields ...pdf

Read Online Classical Theory of Gauge Fields ...pdf

Classical Theory of Gauge Fields

By Valery Rubakov

Classical Theory of Gauge Fields By Valery Rubakov

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.

Classical Theory of Gauge Fields By Valery Rubakov Bibliography

- Rank: #2240878 in eBooks
- Published on: 2002-05-26
- Released on: 2002-05-26
- Format: Kindle eBook

Editorial Review

Review
"*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***

From the Inside Flap
"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

From the Back Cover

"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**

Users Review

From reader reviews:

James Gardner:

As people who live in typically the modest era should be up-date about what going on or data even knowledge to make them keep up with the era and that is always change and move forward. Some of you maybe will update themselves by reading through books. It is a good choice for you personally but the problems coming to an individual is you don't know what type you should start with. This Classical Theory

of Gauge Fields is our recommendation to make you keep up with the world. Why, as this book serves what you want and want in this era.

Sherry Hansen:

Spent a free time for you to be fun activity to perform! A lot of people spent their free time with their family, or all their friends. Usually they performing activity like watching television, planning to beach, or picnic in the park. They actually doing ditto every week. Do you feel it? Do you want to something different to fill your current free time/ holiday? May be reading a book can be option to fill your free of charge time/ holiday. The first thing that you will ask may be what kinds of reserve that you should read. If you want to try out look for book, may be the book untitled Classical Theory of Gauge Fields can be excellent book to read. May be it can be best activity to you.

Kirk Banks:

Reading a book to get new life style in this year; every people loves to go through a book. When you examine a book you can get a lots of benefit. When you read guides, you can improve your knowledge, simply because book has a lot of information into it. The information that you will get depend on what forms of book that you have read. If you wish to get information about your research, you can read education books, but if you act like you want to entertain yourself you can read a fiction books, such us novel, comics, as well as soon. The Classical Theory of Gauge Fields will give you a new experience in studying a book.

Steven Hackett:

A lot of reserve has printed but it differs. You can get it by internet on social media. You can choose the most beneficial book for you, science, comedian, novel, or whatever by simply searching from it. It is named of book Classical Theory of Gauge Fields. You can contribute your knowledge by it. Without leaving behind the printed book, it can add your knowledge and make you happier to read. It is most important that, you must aware about publication. It can bring you from one location to other place.

Download and Read Online Classical Theory of Gauge Fields By Valery Rubakov #2OK9XDRTUZ0

Read Classical Theory of Gauge Fields By Valery Rubakov for online ebook

Classical Theory of Gauge Fields By Valery Rubakov Free PDF d0wnl0ad, audio books, books to read, good books to read, cheap books, good books, online books, books online, book reviews epub, read books online, books to read online, online library, greatbooks to read, PDF best books to read, top books to read Classical Theory of Gauge Fields By Valery Rubakov books to read online.

Online Classical Theory of Gauge Fields By Valery Rubakov ebook PDF download

Classical Theory of Gauge Fields By Valery Rubakov Doc

Classical Theory of Gauge Fields By Valery Rubakov Mobipocket

Classical Theory of Gauge Fields By Valery Rubakov EPub

2OK9XDRTUZ0: Classical Theory of Gauge Fields By Valery Rubakov