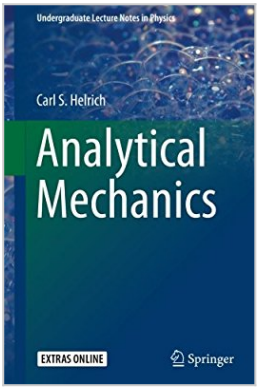

Analytical Mechanics (Undergraduate Lecture Notes in Physics)

By Carl S. Helrich

Analytical Mechanics (Undergraduate Lecture Notes in Physics) By Carl S. Helrich

This advanced undergraduate textbook begins with the Lagrangian formulation of Analytical Mechanics and then passes directly to the Hamiltonian formulation and the canonical equations, with constraints incorporated through Lagrange multipliers. Hamilton's Principle and the canonical equations remain the basis of the remainder of the text.

Topics considered for applications include small oscillations, motion in electric and magnetic fields, and rigid body dynamics. The Hamilton-Jacobi approach is developed with special attention to the canonical transformation in order to provide a smooth and logical transition into the study of complex and chaotic systems. Finally the text has a careful treatment of relativistic mechanics and the requirement of Lorentz invariance.

The text is enriched with an outline of the history of mechanics, which particularly outlines the importance of the work of Euler, Lagrange, Hamilton and Jacobi.

Numerous exercises with solutions support the exceptionally clear and concise treatment of Analytical Mechanics.

Analytical Mechanics (Undergraduate Lecture Notes in Physics)

By Carl S. Helrich

Analytical Mechanics (Undergraduate Lecture Notes in Physics) By Carl S. Helrich

This advanced undergraduate textbook begins with the Lagrangian formulation of Analytical Mechanics and then passes directly to the Hamiltonian formulation and the canonical equations, with constraints incorporated through Lagrange multipliers. Hamilton's Principle and the canonical equations remain the basis of the remainder of the text.

Topics considered for applications include small oscillations, motion in electric and magnetic fields, and rigid body dynamics. The Hamilton-Jacobi approach is developed with special attention to the canonical transformation in order to provide a smooth and logical transition into the study of complex and chaotic systems. Finally the text has a careful treatment of relativistic mechanics and the requirement of Lorentz invariance.

The text is enriched with an outline of the history of mechanics, which particularly outlines the importance of the work of Euler, Lagrange, Hamilton and Jacobi.

Numerous exercises with solutions support the exceptionally clear and concise treatment of Analytical Mechanics.

Analytical Mechanics (Undergraduate Lecture Notes in Physics) By Carl S. Helrich Bibliography

- Rank: #3986678 in Books
- Published on: 2016-10-02
- Released on: 2016-10-12
- Original language: English
- Number of items: 1
- Dimensions: 9.25" h x .83" w x 6.10" l, .0 pounds
- Binding: Paperback
- 349 pages

Editorial Review

From the Back Cover

This advanced undergraduate textbook begins with the Lagrangian formulation of Analytical Mechanics and then passes directly to the Hamiltonian formulation and the canonical equations, with constraints incorporated through Lagrange multipliers. Hamilton's Principle and the canonical equations remain the basis of the remainder of the text.

Topics considered for applications include small oscillations, motion in electric and magnetic fields, and rigid body dynamics. The Hamilton-Jacobi approach is developed with special attention to the canonical transformation in order to provide a smooth and logical transition into the study of complex and chaotic systems. Finally the text has a careful treatment of relativistic mechanics and the requirement of Lorentz invariance.

The text is enriched with an outline of the history of mechanics, which particularly outlines the importance of the work of Euler, Lagrange, Hamilton and Jacobi.

Numerous exercises with solutions support the exceptionally clear and concise treatment of Analytical Mechanics.

About the Author

Prof. Dr. Carl S. Helrich is professor emeritus from Goshen College (USA) with research interests in Condensed Matter Physics, Mathematical Physics and Computational Physics. He received his PhD in Theoretical Plasma Physics from Northwestern University (USA). More than 25 years of teaching experience at Tennessee Space Institute (USA), Research Laboratory Jülich (Germany), Bethel College in Kansas and Goshen College allow for a unique perspective to present analytical mechanics.

Users Review

From reader reviews:

Charles Grove:

What do you in relation to book? It is not important to you? Or just adding material when you really need something to explain what you problem? How about your free time? Or are you busy man? If you don't have spare time to try and do others business, it is give you a sense of feeling bored faster. And you have extra time? What did you do? Everybody has many questions above. They have to answer that question mainly because just their can do that. It said that about publication. Book is familiar in each person. Yes, it is correct. Because start from on pre-school until university need that Analytical Mechanics (Undergraduate Lecture Notes in Physics) to read.

Phyllis Baudoin:

In this 21st millennium, people become competitive in most way. By being competitive right now, people have do something to make these survives, being in the middle of typically the crowded place and notice by simply surrounding. One thing that oftentimes many people have underestimated the item for a while is reading. Yeah, by reading a publication your ability to survive raise then having chance to remain than other is high. In your case who want to start reading the book, we give you this specific Analytical Mechanics (Undergraduate Lecture Notes in Physics) book as beginner and daily reading book. Why, because this book is greater than just a book.

Willard Edwards:

Now a day individuals who Living in the era everywhere everything reachable by connect to the internet and the resources within it can be true or not call for people to be aware of each facts they get. How people have to be smart in getting any information nowadays? Of course the answer then is reading a book. Studying a book can help men and women out of this uncertainty Information mainly this Analytical Mechanics (Undergraduate Lecture Notes in Physics) book because this book offers you rich information and knowledge. Of course the information in this book hundred % guarantees there is no doubt in it as you know.

Jocelyn Harper:

As we know that book is important thing to add our expertise for everything. By a publication we can know everything we really wish for. A book is a range of written, printed, illustrated as well as blank sheet. Every year seemed to be exactly added. This publication Analytical Mechanics (Undergraduate Lecture Notes in Physics) was filled concerning science. Spend your extra time to add your knowledge about your technology competence. Some people has various feel when they reading some sort of book. If you know how big benefit of a book, you can sense enjoy to read a guide. In the modern era like at this point, many ways to get book you wanted.

Read Analytical Mechanics (Undergraduate Lecture Notes in Physics) By Carl S. Helrich for online ebook

Analytical Mechanics (Undergraduate Lecture Notes in Physics) By Carl S. Helrich 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 Analytical Mechanics (Undergraduate Lecture Notes in Physics) By Carl S. Helrich books to read online.

Online Analytical Mechanics (Undergraduate Lecture Notes in Physics) By Carl S. Helrich ebook PDF download

Analytical Mechanics (Undergraduate Lecture Notes in Physics) By Carl S. Helrich Doc

Analytical Mechanics (Undergraduate Lecture Notes in Physics) By Carl S. Helrich Mobipocket

Analytical Mechanics (Undergraduate Lecture Notes in Physics) By Carl S. Helrich EPub