The General Problem Of The Motion Of Coupled Rigid Bodies About A Fixed Point Springer Tracts In Natural Philosophy Vol 7

A forceful and landmark defence of individual rights, Taking Rights Seriously is one of the most important political philosophical works of the last 50 years. "The general theory of relativity is a theory of manifolds equipped with Lorentz metrics and fields which describe the matter content. Einstein's equations equate the Einstein tensor (a curvature quantity associated with the Lorentz metric) with the stress energy tensor (an object constructed using the matter fields). In addition, there are equations describing the evolution of the matter. Using symmetry as a guiding principle, one is naturally led to the Schwarzschild and Friedmann-Lemaãitre-Robertson-Walker solutions, modelling an isolated system and the entire universe respectively. In a different approach, formulating Einstein's equations as an initial value problem allows a closer study of their solutions. This book first provides a definition of the concept of initial data and a proof of the correspondence between initial data and development. It turns out that some initial data allow non-isometric maximal developments, complicating

the uniqueness issue. The second half of the book is concerned with this and related problems, such as strong cosmic censorship. The book presents complete proofs of several classical results that play a central role in mathematical relativity but are not easily accessible to those wishing to enter the subject. Prerequisites are a good knowledge of basic measure and integration theory as well as the fundamentals of Lorentz geometry. The necessary background from the theory of partial differential equations and Lorentz geometry is included."--Publisher's description.

Build real-world Artificial Intelligence applications with Python to intelligently interact with the world around you About This Book Step into the amazing world of intelligent apps using this comprehensive guide Enter the world of Artificial Intelligence, explore it, and create your own applications Work through simple yet insightful examples that will get you up and running with Artificial Intelligence in no time Who This Book Is For This book is for Python developers who want to build real-world Artificial Intelligence applications. This book is friendly to Python beginners, but being familiar with Python would be useful to play around with the code. It will also be useful for experienced Python programmers who are looking to use Artificial Intelligence techniques in their existing technology stacks. What You Will Learn Realize different classification and

regression techniques Understand the concept of clustering and how to use it to automatically segment data See how to build an intelligent recommender system Understand logic programming and how to use it Build automatic speech recognition systems Understand the basics of heuristic search and genetic programming Develop games using Artificial Intelligence Learn how reinforcement learning works Discover how to build intelligent applications centered on images, text, and time series data See how to use deep learning algorithms and build applications based on it In Detail Artificial Intelligence is becoming increasingly relevant in the modern world where everything is driven by technology and data. It is used extensively across many fields such as search engines, image recognition, robotics, finance, and so on. We will explore various real-world scenarios in this book and you'll learn about various algorithms that can be used to build Artificial Intelligence applications. During the course of this book, you will find out how to make informed decisions about what algorithms to use in a given context. Starting from the basics of Artificial Intelligence, you will learn how to develop various building blocks using different data mining techniques. You will see how to implement different algorithms to get the best possible results, and will understand how to apply them to real-world scenarios. If you want to add an intelligence layer to

any application that's based on images, text, stock market, or some other form of data, this exciting book on Artificial Intelligence will definitely be your guide! Style and approach This highly practical book will show you how to implement Artificial Intelligence. The book provides multiple examples enabling you to create smart applications to meet the needs of your organization. In every chapter, we explain an algorithm, implement it, and then build a smart application.

Many books in linear algebra focus purely on getting students through exams, but this text explains both the how and the why of linear algebra and enables students to begin thinking like mathematicians. The author demonstrates how different topics (geometry, abstract algebra, numerical analysis, physics) make use of vectors in different ways and how these ways are connected, preparing students for further work in these areas. The book is packed with hundreds of exercises ranging from the routine to the challenging. Sketch solutions of the easier exercises are available online.

This book makes more widely accessible the text of Lyapunov's major memoir of the general problem of the stability of motion. Translated by A. T. Fuller (University of Cambridge), the work is now available for the first time in the English language, and marked the centenary of the Russian publication in the late 1800s. Including a biography of Lyapunov and a comprehensive bibliography of his work, this excellent volume will prove to be of fundamental interest to all those concerned with the concept of the stability of motion, boundaries of stability, and with nonlinear dynamics.

This work, originally published in 1912, is an introduction to the theory of philosophical enquiry. It gives Russell's views on

such subjects as the distinction between appearance and reality and the existence and nature of matter.

An essential resource for learning about general relativity and much more, from four leading experts Important and useful to every student of relativity, this book is a unique collection of some 475 problems--with solutions--in the fields of special and general relativity, gravitation, relativistic astrophysics, and cosmology. The problems are expressed in broad physical terms to enhance their pertinence to readers with diverse backgrounds. In their solutions, the authors have attempted to convey a mode of approach to these kinds of problems, revealing procedures that can reduce the labor of calculations while avoiding the pitfall of too much or too powerful formalism. Although well suited for individual use, the volume may also be used with one of the modem textbooks in general relativity.

This book is a treatise on time and on background independence in physics. It first considers how time is conceived of in each accepted paradigm of physics: Newtonian, special relativity, quantum mechanics (QM) and general relativity (GR). Substantial differences are moreover uncovered between what is meant by time in QM and in GR. These differences jointly source the Problem of Time: Nine interlinked facets which arise upon attempting concurrent treatment of the QM and GR paradigms, as is required in particular for a background independent theory of quantum gravity. A sizeable proportion of current quantum gravity programs - e.g. geometrodynamical and loop quantum gravity approaches to quantum GR, quantum cosmology, supergravity and M-theory - are background independent in this sense. This book's foundational topic is thus furthermore of practical relevance in the ongoing development of quantum gravity programs. This book shows moreover that eight of the nine facets of the Problem of Time already occur upon

entertaining background independence in classical (rather than quantum) physics. By this development, and interpreting shape theory as modelling background independence, this book further establishes background independence as a field of study. Background independent mechanics, as well as minisuperspace (spatially homogeneous) models of GR and perturbations thereabout are used to illustrate these points. As hitherto formulated, the different facets of the Problem of Time greatly interfere with each others' attempted resolutions. This book explains how, none the less, a local resolution of the Problem of Time can be arrived at after various reconceptualizations of the facets and reformulations of their mathematical implementation. Self-contained appendices on mathematical methods for basic and foundational quantum gravity are included. Finally, this book outlines how supergravity is refreshingly different from GR as a realization of background independence, and what background independence entails at the topological level and beyond. Currently in computer assisted instruction systems a number of problems are presented to each student during a problem session and each individual problem is specified by the author of the session. A better approach might be to provide the author with a language in which he can describe the general type of problem he wants his students to be taught and let the machine generate the specific problems. This would relieve the teacher of the task of writing out a whole series of problems for each general concept he wishes to teach. This thesis presents a subset of English and mathematical notation which the teacher can use to describe a general problem type. The PROBLEM DESCRIPTION PROCESSOR accepts the general problem description and produces a low level language which is used by the PROBLEM DESCRIPTION INTERPRETER to produce specific problems. This system works for fourth grade

arithmetic problems and could be extended for use in other areas of instruction. (Author).

A distinguished mathematician traces the history of science, illustrating philosophy's ongoing role, explaining technology's erosion of the rapport between the two fields, and offering suggestions for their reunion. 1962 edition.

Advances in computer technology have pointed out the next important area of computer applications: solution of non-numerical problems. It is hardly necessary to emphasize the importance of these kind of problems. First of all most of the decisions one has to make in real-life situations are non-numerical in the first instance and can be represented as numerical problems only as approximations which are often only partially valid. Second, to use the computer to its full potential it should be employed as a logical machine, capable of deduction, and not just as a numerical calculating machine. Thus the computer would extend man's capability for logical reasoning and not just for his capability to do fast and accurate calculation. It is not a new area; indeed non-numerical problems are central in fields such as artificial intelligence, heuristic programming, pattern recognition, classification and information-processing (and retrival) etc. However, it is fair to assess that progress in the area has not been quite as expected. One of the reasons was a lack of conceptual and

theoretical framework in which to investigate different classes of non-numerical problems to improve understanding of various types of problems and methods for their solutions and furthermore to enable the methods which have been proven as effective in one situation to be used in another situation with appropriately similar structure.

In the theory of motion of several coupled rigid bodies about a fixed point one can distinguish three basic ramifications. 1. The first, the so-called classical direction of investigations, is concerned with particular cases of integrability ot the equations of motion of a single rigid body about a fixed point,1 and with their geo metrical interpretation. This path of thought was predominant until the beginning of the 20th century and its most illustrious represen tatives are L. EULER (1707-1783), J L. LAGRANGE (1736-1813), L. POINSOT (1777-1859), S. V. KOVALEVSKAYA (1850-1891), and others. Chapter I of the present monograph intends to reflect this branch of investigations. For collateral reading on the general questions dealt with in this chapter the reader is referred to the following textbooks and reports: A. DOMOGAROV [1J, F. KLEIN and A. SOMMERFELD [11, 1 , 1 J, A. G. 2 3 GREENHILL [10J, A. GRAY [1J, R. GRAMMEL [4 J, E. J. ROUTH [21' 2 , 1 2 31' 32J, J. B. SCARBOROUGH [1J, and V. V. GOLUBEV [1, 2J.

A perennial bestseller by eminent mathematician G.

Polya, How to Solve It will show anyone in any field how to think straight. In lucid and appealing prose, Polya reveals how the mathematical method of demonstrating a proof or finding an unknown can be of help in attacking any problem that can be "reasoned" out—from building a bridge to winning a game of anagrams. Generations of readers have relished Polya's deft—indeed, brilliant—instructions on stripping away irrelevancies and going straight to the heart of the problem.

The General Theory of Employment, Interest, and Money, written by legendary author John Maynard Keynes is widely considered to be one of the top 100 greatest books of all time. This masterpiece was published right after the Great Depression. It sought to bring about a revolution, commonly referred to as the ‘Keynesian Revolution’, in the way economists thought—especially challenging the proposition that a market economy tends naturally to restore itself to full employment on its own. Regarded widely as the cornerstone of Keynesian thought, this book challenged the established classical economics and introduced new concepts. ‘The General Theory of Employment, Interest, and Money’ transformed economics and changed the face of modern macroeconomics. Keynes’ argument is based on the idea that the level of employment is not determined by the price of labour, but by the spending of money. It gave way to an entirely new

approach where employment, inflation and the market economy are concerned.