Contact Manifolds In Riemannian Geometry

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Contact Manifolds In Riemannian Geometry ***2023-06-12***

ROBERSON KENDRICK

First Steps in Differential Geometry Springer Nature
This text focuses on developing an intimate acquaintance with the geometric meaning of curvature and thereby introduces and demonstrates all the main technical tools needed for a more advanced course on Riemannian manifolds. It covers proving the four most fundamental theorems relating curvature and topology: the Gauss-Bonnet Theorem, the Cartan-Hadamard Theorem, Bonnet’s Theorem, and a special case of the Cartan-Ambrose-Hicks Theorem.
Sub-Riemannian Geometry MDPI
This book aims to bridge the gap between probability and differential geometry. It gives two constructions of Brownian motion on a Riemannian manifold: an extrinsic one where the manifold is realized as an embedded submanifold of Euclidean space and an intrinsic one based on the ``rolling'' map. It is then shown how geometric quantities (such as curvature) are reflected by the behavior of Brownian paths and how that behavior can be used to extract information about geometric quantities. Readers should have a strong background in analysis with basic knowledge in stochastic calculus and differential geometry. Professor Stroock is a highly-respected expert in probability and analysis. The clarity and style of his exposition further enhance the quality of this volume. Readers will find an inviting introduction to the study of paths and Brownian motion on Riemannian manifolds.
Contact Manifolds in Riemannian Geometry Springer
An excellent reference for anyone needing to examine properties of harmonic vector fields to help them solve research problems. The book provides the main results of harmonic vector ?elds with an emphasis on Riemannian manifolds using past and existing problems to assist you in analyzing and furnishing your own conclusion for further research. It emphasizes a combination of theoretical development with practical applications for a solid treatment of the subject useful to those new to research using differential geometric methods in extensive detail. A useful tool for any scientist conducting research in the field of harmonic analysis Provides applications and modern techniques to problem solving A clear and concise exposition of differential geometry of harmonic vector fields on Reimannian manifolds Physical Applications of Geometric Methods
Riemannian Geometry in an Orthogonal Frame Morgan & Claypool Publishers
Unlike many other texts on differential geometry, this textbook also offers interesting applications to geometric mechanics and general relativity. The first part is a concise and self-contained introduction to the basics of manifolds, differential forms, metrics and curvature. The second part studies applications to mechanics and relativity including the proofs of the Hawking and Penrose singularity theorems. It can be independently used for one-semester courses in either of these subjects. The main ideas are illustrated and further developed by numerous examples and over 300 exercises. Detailed solutions are provided for many of these exercises, making An Introduction to Riemannian Geometry ideal for self-study.
First Steps in Differential Geometry Morgan & Claypool Publishers
This text focuses on developing an intimate acquaintance with the geometric meaning of curvature and thereby introduces and demonstrates all the main technical tools needed for a more advanced course on Riemannian manifolds. It covers proving the four most fundamental theorems relating curvature and topology: the Gauss-Bonnet Theorem, the Cartan-Hadamard Theorem, Bonnet’s Theorem, and a special case of the Cartan-Ambrose-Hicks Theorem.
Riemannian Geometry of Contact and Symplectic Manifolds American Mathematical Soc.
Book IV continues the discussion begun in the first three volumes. Although it is aimed at first-year graduate students, it is also intended to serve as a basic reference for people working in affine differential geometry. It also should be accessible to undergraduates interested in affine differential geometry. We are primarily concerned with the study of affine surfaces which are locally homogeneous. We discuss affine gradient Ricci solitons, affine Killing vector fields, and geodesic completeness. Opozda has classified the affine surface geometries which are locally homogeneous; we follow her classification. Up to isomorphism, there are two simply connected Lie groups of dimension 2. The translation group R2 is Abelian and the ???? + ?? group is non-Abelian. The first chapter presents foundational material. The second chapter deals with Type ?? surfaces. These are the left-invariant affine geometries on R2. Associating to each Type ?? surface the space of solutions to the quasi-Einstein equation corresponding to the eigenvalue ?? = -1 turns out to be a very powerful technique and plays a central role in our study as it links an analytic invariant with the underlying geometry of the surface. The third chapter deals with Type ?? surfaces; these are the left-invariant affine geometries on the ???? + ?? group. These geometries form a very rich family which is only partially understood. The only remaining homogeneous geometry is that of the sphere ??2. The fourth chapter presents relations between the geometry of an affine surface and the geometry of the cotangent bundle equipped with the neutral signature metric of the modified Riemannian extension.
Handbook of Differential Geometry Springer
This text focuses on developing an intimate acquaintance with the geometric meaning of curvature and thereby introduces and demonstrates all the main technical tools needed for a more

advanced course on Riemannian manifolds. It covers proving the four most fundamental theorems relating curvature and topology: the Gauss-Bonnet Theorem, the Cartan-Hadamard Theorem, Bonnet's Theorem, and a special case of the Cartan-Ambrose-Hicks Theorem.

Introduction to Riemannian Manifolds Birkhäuser

This book contains an up-to-date survey and self-contained chapters on contact slant submanifolds and geometry, authored by internationally renowned researchers. The notion of slant submanifolds was introduced by Prof. B.Y. Chen in 1990, and A. Lotta extended this notion in the framework of contact geometry in 1996. Numerous differential geometers have since obtained interesting results on contact slant submanifolds. The book gathers a wide range of topics such as warped product semi-slant submanifolds, slant submersions, semi-slant $\xi^{\perp}$ -, hemi-slant $\xi^{\perp}$ - Riemannian submersions, quasi hemi-slant submanifolds, slant submanifolds of metric f-manifolds, slant lightlike submanifolds, geometric inequalities for slant submanifolds, 3-slant submanifolds, and semi-slant submanifolds of almost paracontact manifolds. The book also includes interesting results on slant curves and magnetic curves, where the latter represents trajectories moving on a Riemannian manifold under the action of magnetic field. It presents detailed information on the most recent advances in the area, making it of much value to scientists, educators and graduate students.

Riemannian Geometry Springer Nature

Provides a comprehensive and self-contained introduction to sub-Riemannian geometry and its applications. For graduate students and researchers.

Aspects of Differential Geometry IV Springer

Differential geometry arguably offers the smoothest transition from the standard university mathematics sequence of the first four semesters in calculus, linear algebra, and differential equations to the higher levels of abstraction and proof encountered at the upper division by mathematics majors. Today it is possible to describe differential geometry as "the study of structures on the tangent space," and this text develops this point of view. This book, unlike other introductory texts in differential geometry, develops the architecture necessary to introduce symplectic and contact geometry alongside its Riemannian cousin. The main goal of this book is to bring the undergraduate student who already has a solid foundation in the standard mathematics curriculum into contact with the beauty of higher mathematics. In particular, the presentation here emphasizes the consequences of a definition and the careful use of examples and constructions in order to explore those consequences.

Lectures on Symplectic Geometry Springer

In the series of volumes which together will constitute the Handbook of Differential Geometry a rather complete survey of the field of differential geometry is given. The different chapters will both deal with the basic material of differential geometry and with research results (old and recent). All chapters are written by experts in the area and contain a large bibliography.

An Introduction to Differential Manifolds Elsevier

Intended for a one year course, this volume serves as a single source, introducing students to the important techniques and theorems, while also containing enough background on advanced topics to appeal to those students wishing to specialise in Riemannian geometry. Instead of variational techniques, the author uses a unique approach, emphasising distance functions and special co-ordinate systems. He also uses standard calculus with some techniques from differential equations to provide a more elementary route. Many chapters contain material typically found in specialised texts, never before published in a single source. This is one of the few works to combine both the geometric parts of Riemannian geometry and the analytic aspects of the theory, while also presenting the most up-to-date research - including sections on convergence and compactness of families of manifolds. Thus, this book will appeal to readers with a knowledge of standard manifold theory, including such topics as tensors and Stokes theorem. Various exercises are scattered throughout the text, helping motivate readers to deepen their understanding of the subject.

Global Riemannian Geometry: Curvature and Topology Springer

The series is devoted to the publication of monographs and high-level textbooks in mathematics, mathematical methods and their applications. Apart from covering important areas of current interest, a major aim is to make topics of an interdisciplinary nature accessible to the non-specialist. The works in this series are addressed to advanced students and researchers in mathematics and theoretical physics. In addition, it can serve as a guide for lectures and seminars on a graduate level. The series de Gruyter Studies in Mathematics was founded ca. 35 years ago by the late Professor Heinz Bauer and Professor Peter Gabriel with the aim to establish a series of monographs and textbooks of high standard, written by scholars with an international reputation presenting current fields of research in pure and applied mathematics. While the editorial board of the Studies has changed with the years, the aspirations of the Studies are unchanged. In times of rapid growth of mathematical knowledge carefully written monographs and textbooks written by experts are needed more than ever, not least to pave the way for the next generation of mathematicians. In this sense the editorial board and the publisher of the Studies are devoted to continue the Studies as a service to the mathematical community. Please submit any book proposals to Niels Jacob. Titles in planning include Flavia Smarazzo and Alberto Tesei, Measure Theory: Radon Measures, Young Measures, and Applications to Parabolic Problems (2019) Elena Cordero and Luigi Rodino, Time-Frequency Analysis of Operators (2019) Mark M. Meerschaert, Alla Sikorskii, and Mohsen Zayernouri, Stochastic and Computational Models for Fractional Calculus, second edition (2020) Mariusz Lemańczyk, Ergodic Theory: Spectral Theory, Joinings, and Their Applications (2020) Marco Abate, Holomorphic Dynamics on Hyperbolic Complex Manifolds (2021) Miroslava Antić, Joeri Van der Veken, and Luc Vrancken, Differential Geometry of Submanifolds: Submanifolds of Almost Complex Spaces and Almost Product Spaces (2021) Kai Liu, Ilpo Laine, and Lianzhong Yang, Complex Differential-Difference Equations (2021) Rajendra Vasant Gurjar, Kayo Masuda, and Masayoshi Miyanishi, Affine Space Fibrations (2022)

Differential Geometry American Mathematical Soc.

Book endorsed by the Sunyer Prize Committee (A. Weinstein, J. Oesterle et. al.).

A Comprehensive Introduction to Sub-Riemannian Geometry Springer Science & Business Media

The purpose of this handbook is to give an overview of some recent developments in differential geometry related to supersymmetric field theories. The main themes covered are: Special geometry and supersymmetry Generalized geometry Geometries with torsion Para-geometries Holonomy theory Symmetric spaces and spaces of constant curvature Conformal geometry Wave equations on Lorentzian manifolds D-branes and K-theory The intended audience consists of advanced students and researchers working in differential geometry, string theory, and related areas. The emphasis is on geometrical structures occurring on target spaces of supersymmetric field theories. Some of these structures can be fully described in the classical framework of pseudo-Riemannian geometry. Others lead to new

concepts relating various fields of research, such as special Kahler geometry or generalized geometry.

Contact manifolds in Riemannian geometry Springer Science & Business Media

The second edition of An Introduction to Differentiable Manifolds and Riemannian Geometry, Revised has sold over 6,000 copies since publication in 1986 and this revision will make it even more useful. This is the only book available that is approachable by "beginners" in this subject. It has become an essential introduction to the subject for mathematics students, engineers, physicists, and economists who need to learn how to apply these vital methods. It is also the only book that thoroughly reviews certain areas of advanced calculus that are necessary to understand the subject. Line and surface integrals Divergence and curl of vector fields

Riemannian Manifolds Elsevier

Differential Geometry is a wide field. We have chosen to concentrate upon certain aspects that are appropriate for an introduction to the subject; we have not attempted an encyclopedic treatment. Book III is aimed at the first-year graduate level but is certainly accessible to advanced undergraduates. It deals with invariance theory and discusses invariants both of Weyl and not of Weyl type; the Chern–Gauss–Bonnet formula is treated from this point of view. Homothety homogeneity, local homogeneity, stability theorems, and Walker geometry are discussed. Ricci solitons are presented in the contexts of Riemannian, Lorentzian, and affine geometry.

Contact Geometry of Slant Submanifolds Cambridge University Press

This volume contains the papers presented at a symposium on differential geometry at Shinshu University in July of 1988. Carefully reviewed by a panel of experts, the papers pertain to the following areas of research: dynamical systems, geometry of submanifolds and tensor geometry, lie sphere geometry, Riemannian geometry, Yang-Mills Connections, and geometry of the Laplace operator.

Differential Geometry and Lie Groups Gulf Professional Publishing

Since the year 2000, we have witnessed several outstanding results in geometry that have solved long-standing problems such as the Poincaré conjecture, the Yau–Tian–Donaldson conjecture, and the Willmore conjecture. There are still many important and challenging unsolved problems including, among others, the Strominger–Yau–Zaslow conjecture on mirror symmetry, the relative Yau–Tian–Donaldson conjecture in Kähler geometry, the Hopf conjecture, and the Yau conjecture on the first eigenvalue of an embedded minimal hypersurface of the sphere. For the younger generation to approach such problems and obtain the required techniques, it is of the utmost importance to provide them with up-to-date information from leading specialists.The geometry conference for the friendship of China and Japan has achieved this purpose during the past 10 years. Their talks deal with problems at the highest level, often accompanied with solutions and ideas, which extend across various fields in Riemannian geometry, symplectic and contact geometry, and complex geometry.

Springer Science & Business Media

This book contains a clear exposition of two contemporary topics in modern differential geometry: distance geometric analysis on manifolds, in particular, comparison theory for distance functions in spaces which have well defined bounds on their curvature the application of the Lichnerowicz formula for Dirac operators to the study of Gromov's invariants to measure the K-theoretic size of a Riemannian manifold. It is intended for both graduate students and researchers.