PREFACE

The thesis entitled "On Some Structures and Lifts in a Differentiable Manifold", is being submitted to C.S.J.M. University Kanpur for the award of the degree of Doctor of Philosophy in Mathematics. It is the outcome of the original research work carried on by me in the Department of Mathematics, D.B.S. (P.G.) College Kanpur under the able guidance of Dr. C.S. Prasad, Associate Professor, in Mathematics D.B.S. (P.G.) College Kanpur.

The notations used in the thesis are mostly form the following books:

1. "Notes on Differential Geometry", by Professor N.J. Hicks.
3. "Integral formulas in Riemannian Geometry", by Professor K. Yano.
5. "Structures on a Differentiable Manifold and their Applications", by Professor R.S. Mishra.

The chapters have been divided into sections. These sections run serially from the beginning to the end of the thesis. For the sake of convenience, the equations are numbered as (4.3.7) which will represent the seventh equations of the third section of fourth chapter.
Some of the results embodied in this work have already been published in the form of research papers and others are under publication. I have adopted the following procedure as regards the statement of theorems and their proofs. The theorems are stated first, then their proofs follow.

The thesis has been divided into seven chapters. The first chapter though introductory, has found adequate applications in the subsequent chapters.

The subject matter of chapter II is the study of GF-Paracontact metric structure in a differentiable manifold. I have obtained the necessary conditions that the GF-Paracontact metric structure manifold be completely integrable. This chapter has been published in the form of research paper in Rev. Bull. Cal. Math. Soc, Vol. 17, No. (1 & 2), pp.07-12, 2009.

Chapter III deals with the study certain properties of Lorentzian paracontact structure manifold and to obtain the integrability conditions of this structure.

Chapter IV is devoted to the study of the structure connection in a Lorentzian paracontact Riemannian manifold and established various results.

In chapter V, I have studied Lorentzian paracontact structure and product structure in the tangent bundle and principal fibre bundle and obtained some results related to Nijenhuis tensor and Lie-derivative.
Chapter VI is devoted to the study of horizontal and complete lift of $F_a(K, 1)$-structure in the tangent bundle and the chapter VII deals with the study of some properties of conformal infinitesimal transformation of an almost para $r$-contact structure in a differentiable manifold.


The references are given at the end of each chapter.

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(Pravesh Kumar Singh Chauhan)