

# Contents

I. Automorphisms of $G$ -Structures . . . . .	1
1. $G$ -Structures . . . . .	1
2. Examples of $G$ -Structures . . . . .	5
3. Two Theorems on Differentiable Transformation Groups. . . . .	13
4. Automorphisms of Compact Elliptic Structures . . . . .	16
5. Prolongations of $G$ -Structures . . . . .	19
6. Volume Elements and Symplectic Structures . . . . .	23
7. Contact Structures . . . . .	28
8. Pseudogroup Structures, $G$ -Structures and Filtered Lie Algebras . . . . .	33
II. Isometries of Riemannian Manifolds . . . . .	39
1. The Group of Isometries of a Riemannian Manifold . . . . .	39
2. Infinitesimal Isometries and Infinitesimal Affine Transformations . . . . .	42
3. Riemannian Manifolds with Large Group of Isometries . . . . .	46
4. Riemannian Manifolds with Little Isometries . . . . .	55
5. Fixed Points of Isometries . . . . .	59
6. Infinitesimal Isometries and Characteristic Numbers . . . . .	67
III. Automorphisms of Complex Manifolds. . . . .	77
1. The Group of Automorphisms of a Complex Manifold . . . . .	77
2. Compact Complex Manifolds with Finite Automorphism Groups . . . . .	82
3. Holomorphic Vector Fields and Holomorphic 1-Forms . . . . .	90
4. Holomorphic Vector Fields on Kähler Manifolds . . . . .	92
5. Compact Einstein-Kähler Manifolds . . . . .	95
6. Compact Kähler Manifolds with Constant Scalar Curvature . . . . .	97
7. Conformal Changes of the Laplacian . . . . .	100
8. Compact Kähler Manifolds with Nonpositive First Chern Class . . . . .	103

9. Projectively Induced Holomorphic Transformations . . . . .	106
10. Zeros of Infinitesimal Isometries . . . . .	112
11. Zeros of Holomorphic Vector Fields . . . . .	115
12. Holomorphic Vector Fields and Characteristic Numbers. . . . .	119
IV. Affine, Conformal and Projective Transformations . . . . .	122
1. The Group of Affine Transformations of an Affinely Con- nected Manifold . . . . .	122
2. Affine Transformations of Riemannian Manifolds . . . . .	125
3. Cartan Connections . . . . .	127
4. Projective and Conformal Connections . . . . .	131
5. Frames of Second Order . . . . .	139
6. Projective and Conformal Structures . . . . .	141
7. Projective and Conformal Equivalences . . . . .	145
Appendices. . . . .	150
1. Reductions of 1-Forms and Closed 2-Forms . . . . .	150
2. Some Integral Formulas . . . . .	154
3. Laplacians in Local Coordinates . . . . .	157
4. A Remark on $d'd''$ -Cohomology . . . . .	159
Bibliography . . . . .	160
Index . . . . .	181