

## CONTENTS

	PAGE
PREFACE	
INTRODUCTION	
CHAPTER 1. The theorem of Ambrose and Singer	1
A. Preliminaries	1
B. A first proof	13
C. The proof of Ambrose and Singer	21
CHAPTER 2. Homogeneous Riemannian structures	33
CHAPTER 3. The eight classes of homogeneous structures	37
CHAPTER 4. Homogeneous structures on surfaces	43
CHAPTER 5. Homogeneous structures of type $\mathcal{C}_1$	49
CHAPTER 6. Naturally reductive homogeneous spaces and homogeneous structures of type $\mathcal{C}_3$	56
CHAPTER 7. The Heisenberg group	72
CHAPTER 8. Examples and the inclusion relations	83
A. Homogeneous structures on three-dimensional Lie groups	83
B. $k$ -symmetric spaces	85
C. The four-dimensional hyperbolic space	89
D. Remarks	90
CHAPTER 9. Generalized Heisenberg groups	94
A. Lie groups of type H	94
B. Geodesics and Killing vector fields on groups of type H	100



C.	The geometry of the six-dimensional group of type H	104
D.	Some further results	111
E.	Remarks	114
CHAPTER 10.	Self-dual and anti-self-dual homogeneous structures	116
REFERENCES		120
INDEX		124