

## TABLE OF CONTENTS

	<u>Page</u>
Preface	xi
Introduction	xii
Chapter 0. <u>Preliminaries</u>	1
§1. Assumptions on $G$	1
§2. Roots and $Z(\mathfrak{g})$	4
§3. Group representations and Harish-Chandra modules	11
§4. Finite dimensional representations	26
Chapter 1. <u><math>SL(2, \mathbb{R})</math></u>	36
§1. Group representations and Lie algebra representations	36
§2. Structure of Harish-Chandra modules	44
§3. The principal series	57
§4. $SL^{\pm}(2, \mathbb{R})$	68
§5. An introduction to the $R$ group	75
Chapter 2. <u>Geometry of the Kazhdan-Lusztig Conjecture</u>	92
§1. The Kazhdan-Lusztig conjecture for Verma modules	92
§2. A special case of the classification	98
§3. Geometry on the flag manifold	106

	<u>Page</u>
Chapter 3. <u>Kostant's Borel-Weil Theorem</u>	115
§1. The Casselman-Osborne Theorem	115
§2. Kostant's Theorem	122
Chapter 4. <u>Principal Series Representations and Quasisplit Groups</u>	136
§1. The principal series	136
§2. The Langlands quotient for principal series	149
§3. Fine K-types and the R group	169
§4. Principal series for quasisplit groups: reducibility and equivalences	191
§5. An introduction to the translation principle	206
Chapter 5. <u>Cohomology of <math>(\mathfrak{g}, K)</math> Modules</u>	217
§1. Representations of K	217
§2. The Hochschild-Serre spectral sequence	226
§3. Construction of parabolic subalgebras	234
§4. Construction of cohomology	282
Chapter 6. <u>Zuckerman's Construction and the Classification of Irreducible <math>(\mathfrak{g}, K)</math> Modules</u>	298
§1. The category $\mathcal{M}(h, B)$	299
§2. Zuckerman's functors	325
§3. Parabolic induction	344

	<u>Page</u>
Chapter 6. <u>(Continued)</u>	
§4. Principal series revisited	374
§5. Construction of the standard representations	392
§6. Other parametrizations of $\hat{G}$ , and the Langlands classification	409
§7. Proof of Theorem 2.2.4	425
Chapter 7. <u>Coherent Continuation of Characters</u>	429
§1. Complex groups and ideals in $U(\mathfrak{g})$	429
§2. Translation functors revisited	436
§3. The translation principle, and an introduction to wall crossing	461
§4. Translation functors and parabolic subalgebras	488
Chapter 8. <u>Reducibility of the Standard Representations</u>	495
§1. Cohomology of irreducible representations	495
§2. Coherent continuation of the standard representations	527
§3. Cayley transforms of regular characters	547
§4. Non-complex root walls	568
§5. More about $U_\alpha$	588
§6. Standard irreducible modules	602
§7. Singular infinitesimal characters	619

	<u>Page</u>
Chapter 9. <u>The Kazhdan-Lusztig Conjecture</u>	624
§1. Commutativity of certain diagrams	624
§2. Blocks in $\mathcal{F}(\mathfrak{g}, K)$	648
§3. Vanishing theorems for cohomology	670
§4. Euler characteristics, character formulas, and Zuckerman's theorem	699
§5. Vanishing theorems using Conjecture 7.3.25	712
§6. The Kazhdan-Lusztig conjecture	725
§7. Open problems	737
 Bibliography	 742
 Index	 748
 Index of Notation	 751