

DEFORMATIONS OF LIE SUBGROUPS AND THE VARIATION OF ISOTROPY SUBGROUPS

BY

R. W. RICHARDSON, JR.

University of Warwick Coventry, England and University of Washington, Seattle, Wash., U.S.A. (1)

Table of Contents

| | |
|--|----|
| Introduction | 35 |
| § 0. Preliminaries | 37 |
| CHAPTER I. DEFORMATIONS OF LIE SUBGROUPS | |
| § 1. Analytic families of Lie subgroups | 38 |
| § 2. The normal displacement of an analytic family | 41 |
| § 3. Proof of Theorem 3.1 | 46 |
| § 4. Relation of Theorem 3.1 to results on deformations of subalgebras of Lie algebras . . | 51 |
| § 5. Variations on Theorem 3.1 | 52 |
| § 6. Algebraic families of algebraic subgroups | 54 |
| § 7. Complex-analytic families of subgroups of complex Lie groups | 58 |
| CHAPTER II. THE VARIATION OF ISOTROPY SUBGROUPS | |
| § 8. The analytic family G^* | 60 |
| § 9. Algebraic transformation groups | 63 |
| § 10. Analytic transformation groups | 65 |
| § 11. Relation between analytic families of subgroups and families of isotropy subgroups . | 66 |
| § 12. Examples | 68 |

Introduction

Let the (real or complex) Lie group G act analytically on the connected (real or complex) analytic manifold M . In this paper we shall study the behaviour of the isotropy subgroups G_x as a function of $x \in M$. If $m = \min_{x \in M} \dim G_x$, it is trivial to show that $M_0 =$

(1) Partial support received from NSF Grant GP-21504.