TABLE OF CONTENTS

Introduction

Notation and Terminology

Part VII.

Part I.	Some Basic Algebraic Geometry	1
		_
	1. Affine Geometry 2. Projective Geometry	1 3
	3. Regular Mappings	6
	4. The Constructibility Theorem of Chevalley	9
	5. Sheaves and Vector Bundles	10
	6. The Grassman Variety	14
	7. Some Remarks on Algebraic Geometry Over a Non-	
	Algebraically Closed Field	16
Part II.	Some Basic System Theory	18
	1. Dynamical Systems	18
	2. Controllability and Reachability	22
	3. Constructibility and Observability	24
	4. State Variables 5. Transfer Functions	26
	5. Transfer Functions	32
Part III.	Invariant Theory and Orbit Space Problems	36
	1. Algebraic Groups	36
	2. On the Moduli of Endomorphisms	38
	3. Quotients	42
	4. Reductive Groups and Hilbert's 14th Problem	44
	5. Richardson's Criterion	46
Part IV.	Global Moduli of Linear Time-Invariant Dynamical Systems	48
	1. Complete Reachability and Pre-Stability	48
	Construction of the Quotient Space of Completely	
	Reachable Pairs	53
	3. Moduli of Linear Time-Invariant Dynamical Systems	54
	4. The Geometric Structure of the Moduli Space	57
	5. The Global Moduli of Completely Reachable Matrix Triples	59 63
5	6. Some Open Problems	
Part V.	Local Moduli of Linear Time-Invariant Dynamical Systems	65
	1. Versal Deformations of Matrix Pairs	66
	2. The Control Canonical Form	68
	3. On the Construction of Holomorphic Canonical Forms	71
_	4. Versal Deformations of Matrix Triples	74
Part VI.	Algebraic Realization Theory	76
	1. Input/Output Maps and Abstract Realization Theory	76
	2. Hankel Matrices	80
	3. Realizations of Rational Matrices	84
	4. Partial Realizations	87
	5. Systems over Rings	89
	6. Polynomial Systems	96

On the Geometry of Rational Transfer Functions

2. Complex Transfer Functions

The Topology of Rat(n)
 Partial Realizations (Again)

1. Cauchy Indices and the Connected Components of Rat(n)

104

104

108 113

116

Part VIII.	Feedback and Stabilization of Systems with Parameter	
	Uncertainty	119
	1. Classical Stability Theory	119
	2. Kronecker Indices and State Feedback	122
	3. Coefficient and Pole Assignability	130
	4. Blending and Output Feedback	133
	5. Interpolation in the Unit Disc	139
	6. Feedback Stabilization of Plants with Uncertainty	
	in the Gain Factor	143
Bibliograph	<u>y</u>	150
Index		158