

TABLE OF CONTENTS

PREFACE	vii
1 INTRODUCTION	1
1.1 Preliminaries	1
1.2 Henkin-Models	7
1.3 Ultraproducts	13
2 KEISLER'S SPECIALIZATION OF THE METHOD OF CONSTANTS	19
2.1 Henkin-Keisler Models	19
2.2 Maximal Extensions and Ultrafilters	21
2.3 Henkin-Keisler Models and Ultraproducts	25
3 THE CARDINALITY OF HENKIN-KEISLER MODELS	29
3.1 Finitely Satisfiable Sets of Functions	30
3.2 Families of Almost Disjoint Functions	32
3.3 Regular Extensions of $\text{Th}(\mathcal{T}^*)$	38
3.4 Regular Extensions and Regular Ultrafilters	42
3.5 Summary	48
4 CLASSIFYING MAXIMAL EXTENSIONS	51
4.1 Principal Extensions	51
4.2 κ - complete Extensions	56
5. ELEMENTARY SUBSYSTEMS OF HENKIN-KEISLER MODELS I	61
5.1 Henkin-Keisler Powers	62
5.2 Well Behaved Sets of Functions	66
5.3 Elementary Subsystems of Henkin-Keisler Powers Generated by Well Behaved Sets	78
5.4 Measurable Cardinals	84
5.5 Limits on the Cardinality of Elementary Subsystems Generated by Well Behaved Sets	91
5.6 Algebraic Techniques for Constructing Well Behaved Sets	98
5.7 Limit Ultrapowers	103
5.8 The Spectra of Well Behaved Sets	108

6	ELEMENTARY SUBSYSTEMS OF HENKIN-KEISLER MODELS II	111
6.1	Henkin-Keisler Products	111
6.2	Well Behaved Sets of Functions	112
6.3	Elementary Subsystems of Henkin-Keisler Products Generated by Well Behaved Sets	118
6.4	Other Methods for Constructing Well Behaved Sets	126
7	SMALL MODELS	129
7.1	Small Elementary Extensions	130
7.2	Theories with Small Models	139
7.3	A Downward Löwenheim-Skolem Theorem for Elementary Extensions	141
7.4	A Two Cardinal Theorem	147
8	THE KEISLER-SHELAH ISOMORPHISM THEOREMS	151
8.1	Finite Interpretations	151
8.2	Keisler's Isomorphism Theorem	154
8.3	Eliminating the Generalized Continuum Hypothesis	161
8.4	The Single Ultrafilter Version of the Keisler-Shelah Isomorphism Theorem	177
8.5	Characterizing First Order Properties	189
9	SATURATED MODELS	199
9.1	Universal Models	199
9.2	Saturated Models	200
9.3	Saturated Henkin-Keisler Powers I	208
9.4	Saturated Henkin-Keisler Powers II	219
9.5	Saturated Henkin-Keisler Products	232
	APPENDIX	239
	A Proof of Banach's Theorem	
	INDEX	
	Symbols	241
	Definitions	245