Table of Contents

Page

Abstract..... 2

Acknowledgements..... 6

Introduction..... 8

Chapter 0: Preliminaries..... 22

§1. Preliminary Logic and Model Theory..... 23

§2. Model Completions and Saturated Models.. 32

§3. Stone Spaces and Basic Assumption..... 42

§4. Morley Spaces..... 48

Chapter 1: Decompositions..... 52

§1. Totally Transcendental Subspaces..... 52

§2. Totally Transcendental Formulas..... 54

Chapter 2: Generalized Algebraic Theories..... 60

§1. Relative Ranks and Degrees of Extensions 60

§2. Generalized Algebraic Theories..... 91

Chapter 3: Examples of (Generalized) Algebraic..... 103
Theories

§1. Fields..... 104

§2. Differential Fields..... 106

§3. Ordered Fields..... 146

§4. Valued Fields..... 149

Page

Chapter 4: Generalized Dense Structures (Theories) and Σ_1-Embeddings 156

§1. Σ_1 Embeddings of Specific Algebraic Structure 158

§2. Generalized Dense Structures (Theories) 163

§3. Σ_1 Embeddings of Dense Structures..... 166

§4. Examples and Applications..... 169

Chapter 5: Questions and Ideas for Further Development..... 172

Bibliography..... 178

Biography..... 180