

TABLE OF CONTENTS

Introduction	1
Chapter 0. Notation	3
Chapter 1. Preliminary Analysis	3
1.1.0 Calculus in Measure Spaces	4
1.2.0 Weighted Hardy Inequalities	12
1.3.0 Equivalence of Capacities	25
Chapter 2. Basic Results	32
2.1.0 Weighted Sobolev Inequalities	33
2.2.0 Properties of Sobolev Spaces, Capacities and Sobolev Inequalities for Applications to Differential Equations	45
2.3.0 Higher Integrability from Reverse Hölder Inequalities	89
Chapter 3. Applications	96
3.1.0 A Harnack Inequality and Continuity of Weak Solutions for Degenerate Elliptic Equations	97
3.2.0 Modulus of Continuity Estimates for Weighted Sobolev Functions and V.M.O. Functions	126
3.3.0 Higher Integrability for the Gradient of Solutions of Elliptic Systems and Applications to Continuity of Solutions	134
Bibliography	140
Index	143