Contents

謝辭 i

Abstract iii

中文摘要 iv

1 Introduction 1

2 Basic Theory of Value Distribution 4

2.1 Poisson-Jensen's Formula 4

2.2 The Nevanlinna's First Fundamental Theorem 6

2.3 The Nevanlinna's Second Fundamental Theorem 8

2.4 The Estimation of $S(r, f)$ 9

2.5 Deficient Value of Meromorphic Functions 12

2.6 Some Well-Known Results on Four Value Problem 13

3 Unicity of Meromorphic Functions of Class $\mathcal{A}$ 15

3.1 Introduction 15

3.2 Some Facts About Meromorphic Functions of Class $\mathcal{A}$ 17

3.3 Main Results and Proofs 18

3.4 A Conjecture 20

4 On a Conjecture of C. C. Yang **22**

4.1 Introduction 22

4.2 Some Lemmas 24

4.3 Main Result and Proof 25

5 The Deficient Values of a Class of Meromorphic Functions **28**

5.1 Introduction 28

5.2 The Deficient Values of Rational Functions 30

5.3 The Proof of Theorem A 31

5.4 The Proof of Theorem B 35

6 Some Generalization of Nevanlinna's Five-Values Theorem **41**

6.1 Introduction 41

6.2 Meromorphic Functions Partially Share Values 43

6.3 Meromorphic Functions Partially Share Small Functions 45

7 On the Uniqueness of Entire Functions and Their Derivatives **49**

7.1 Introduction 49

7.2 Lemmas and Known Results 50

7.3 Main Results and Proofs 52

8 Some Results on Meromorphic Functions Sharing Four Values DM 65

8.1 Introduction 65

8.2 Key Examples and Facts 66

8.3 Main Result and Proof 68

References 69