UNICITY THEOREMS CONCERNING A L-FUNCTION AND A MEROMORPHIC FUNCTION

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Abstract: Inspired by a lot of studies on the uniqueness results of a L-function with a meromorphic function, in this article, we examine the uniqueness of two differential polynomials, one generated by a meromorphic function with finitely many poles and another by a L-function, when they share two values with some weight. The results of our examination extend, generalize as well as improve the results of Hao and Chen [2, 3].

Keywords and Phrases: L-function, linear differential polynomial, sharing values, finite weight, Nevanlinna theory.

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1. Introduction

Let $\mathbb{C}$ represent the complex plane, $\mathbb{N}$ represent the set of natural numbers, $\mathbb{W} = \mathbb{N} \cup \{0\}$, $\overline{\mathbb{C}} = \mathbb{C} \cup \{\infty\}$, $\underline{\mathbb{C}} = \mathbb{C} \backslash \{0\}$.

We assume that the readers are well aware of the standard notations and definitions used in the Nevanlinna value distribution theory such as $T(r, \mathsf{f})$, $m(r, \mathsf{f})$, $N(r, \mathsf{f})$, $\overline{N}(r, \mathsf{f})$ etc. The reader can refer ([4], [15], [16]) for basics of Nevanlinna theory.

Let $\mathscr{F} = \{\mathsf{f}(z) | \mathsf{f}(z) \text{ is a non-constant meromorphic function in } \mathbb{C}\}$ and let $\mathscr{G} = \{\mathsf{g}(z) | \mathsf{g}(z) \text{ is a non-constant meromorphic function } \mathbb{C} \text{ with finitely many poles}\}$. For $\mathsf{f}_1, \mathsf{f}_2 \in \mathscr{F}$ and $b \in \overline{\mathbb{C}}$, if $\mathsf{f}_1 - b$ and $\mathsf{f}_2 - b$ have identical zeros taking into account