South East Asian J. of Mathematics and Mathematical Sciences
Vol. 20, No. 1 (2024), pp. 99-114

DOI: 10.56827/SEAJMMS.2024.2001.8 **ISSN (Online): 2582-0850**

ISSN (Print): 0972-7752

ON UNIQUENESS OF MEROMORPHIC FUNCTIONS IGNORING MULTIPLICITY CONCERNING A QUESTION OF YI

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(**Received:** *Feb. 01, 2024* **Accepted:** *Mar. 10, 2024* **Published:** *Apr. 30, 2024)*

Abstract: Let $S = \{z \in \mathbb{C} : P(z) = z^n + az^{n-1} + b = 0\}$, where $a, b \in \mathbb{C}$ be nonzero constants satisfying $\dfrac{b}{a^n} \neq \dfrac{(-1)^n(n-1)^{n-1}}{n^n}$. The uniqueness of meromorphic functions sharing S counting multiplicity(resp. with weight 2) has been studied by Yi ([18]) (resp. Lahiri, Banerjee ([12])). In this paper, we consider the uniqueness of meromorphic functions sharing S ignoring multiplicity. We first obtain the analog of Yi's Theorem 2 ([18]). Next, we show that S is a unique range set for the class of meromorphic functions ignoring multiplicity of higher multiplicities of either zeros or poles, which different from S. Mallick - D. Sarkar's ([13]). We discuss some applications of the main result. Our results are inspired by a work of Yi ([18]) and Khoai ([11]).

Keywords and Phrases: Uniqueness, ignoring multiplicity, multiplicities of zeros, poles of meromorphic functions.

2020 Mathematics Subject Classification: 30D35.

1. Introduction and Main Results

Let f be a meromorphic function in $\mathbb{C}$, $a \in \mathbb{C} \cup \{\infty\}$, and k be a nonnegative integer or infinity. We assume that the reader is familiar with the notations of Nevanlinna theory (see, for example ([6]), ([8])): $T(r, f)$, $N(r, f)$, $m(r, f)$, $\Theta(\infty, f), ...$