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Weighted sharing and a result of Ozawa

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Abstract. We prove a uniqueness theorem for meromorphic functions sharing three values with unit weight which improves a result of Ozawa.

Key words: weigted sharing, uniqueness, meromorphic function.

1. Introduction, Definitions and Results

Let f and g be two nonconstant meromorphic functions defined in the open complex plane C. If for some $a \in C \cup \{\infty\}$ the zeros of $f-a$ and $g-a$ coincide in locations and multiplicities we say that f and g share the value a CM (counting multiplicities) and if coincide in locations only we say that f and g share a IM (ignoring multiplicities).

We do not explain the standard notations and definitions of the value distribution theory as these are available in [2]. However, we explain some notations and definitions which will be needed in the sequel. Throughout the paper we denote by f and g two nonconstant meromorphic functions defined on C unless otherwise stated.

Definition 1 [4] We denote by $N(r,a;f \mid =1)$ the counting function of simple a-points of f.

Definition 2 [4] We denote by $\overline{N}(r,a;f \mid \geq 2)$ the counting function of multiple a-points of f, where each a-point is counted only once.

Definition 3 [10] We define $\delta_2(a;f) = 1 - \limsup_{r\longrightarrow\infty} \frac{N_2(r,a;f)}{T(r,f)}$, where $N_2(r,a;f) = \overline{N}(r,a;f) + \overline{N}(r,a;f \mid \geq 2)$.

Clearly $0 \leq \delta(a;f) \leq \delta_2(a;f) \leq \Theta(a;f) \leq 1$.

In order to investigate the influence of the distribution of zeros on the uniqueness of entire functions M. Ozawa [5] proved the following theorem.

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