

Lahiri, Indrajit

Weighted sharing and uniqueness of meromorphic functions. (English) Zbl 0981.30023
Nagoya Math. J. 161, 193-206 (2001).

This article proposes an idea of weighted shared values for meromorphic functions, resulting in improvements of some previous shared value results. As to the definition, given $k \in \mathbb{N}_0 \cup \{\infty\}$ and $a \in \mathbb{C} \cup \{\infty\}$, let $E_k(a; f)$ denote the set of all a -points of f , counting an a -point according to its multiplicity m , if $m \leq k$ and $k + 1$ times, if $m > k$. If now $E_k(a; f) = E_k(a; g)$, we say that f, g share (a, k) . Clearly, sharing $(a, 0)$, resp. (a, ∞) , equals to sharing a IM , resp. CM . Denoting now by $N(r, a; f) = 1$ the integrated function for simple a -points of f , it is well-known, see [*H.-X. Yi, Kodai Math. J.* 13, No. 3, 363-372 (1990; [Zbl 0712.30029](#))], that if f, g share $0, 1$ and ∞ CM and if $N(r, 0; f) = 1) + N(r, \infty; f) = 1) < \{\lambda + o(1)\} \max(T(r, f), T(r, g))$, where $0 < \lambda < 1/2$, in a set of r -values of infinite linear measure, then either $f = g$ or $fg = 1$. The improvement now proves the same conclusion, provided f, g share $(0, 1)$, (∞, ∞) and $(1, \infty)$. The conclusion also follows whenever f, g share $(0, 1)$, $(\infty, 0)$ and $(1, \infty)$ and $N(r, 0; f) = 1) + 4\bar{N}(r, \infty; f) < \{\lambda + o(1)\} \max(T(r, f), T(r, g))$. The proofs apply careful considerations with the Nevanlinna theory. The paper is clearly written, including some illuminating examples.

Reviewer: [Ilpo Laine \(Joensuu\)](#)

MSC:

[30D35](#) Value distribution of meromorphic functions of one complex variable, Nevanlinna theory

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