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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 $m \leqq k$ and $k+1$ times, if $m > k$. If now $E_k(a; f) = E_k(g; f)$, 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

Full Text: DOI

References:

[1] DOI: 10.2996/kmj/1138039280 · Zbl 0712.30029 · doi:10.2996/kmj/1138039280
[2] Acta Math. Sin 31 pp 570– (1988)
[3] Chin. Ann. Math 9A pp 434– (1988)
[4] DOI: 10.2996/kmj/1138039166 · Zbl 0707.30024 · doi:10.2996/kmj/1138039166
[5] Marcel Dekker Inc pp 19– (1982)
[6] DOI: 10.1007/BF02786728 · Zbl 0337.30020 · doi:10.1007/BF02786728
[7] DOI: 10.2996/kmj/1138043482 · Zbl 0849.30025 · doi:10.2996/kmj/1138043482
[8] Meromorphic Functions (1964) · Zbl 0115.06203
[9] DOI: 10.2996/kmj/1138038877 · Zbl 0663.30024 · doi:10.2996/kmj/1138038877