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UNICITY THEOREMS FOR MEROMORPHIC FUNCTIONS THAT SHARE THREE VALUES

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This paper studies the problem of the uniqueness of meromorphic functions that share three values. The results in this paper improve some theorems given by H. Ueda, Shou-Zhen Ye and Hong-Xun Yi. Examples are provided to show that our results are sharp.

1. Introduction and main results

Let f and g be two nonconstant meromorphic functions in the complex plane. If f and g have the same a-points with the same multiplicities, we say f and g share the value a *CM.* (see [1]). It is assumed that the reader is familiar with the basic notations and fundamental results of Nevanlinna's theory of meromorphic functions, as found in [2]. It will be convenient to let E denote any set of positive real numbers of finite linear measure, not necessarily the same at each occurrence. The notation $S(r, f)$ denotes any quantity satisfying

$$S(r, f)=o(T(r, f)) \qquad (r\to\infty, r\notin E).$$

H. Ueda proved the following theorem.

THEOREM A (see [3]). *Let f and g be two distinct nonconstant entire functions such that f and g share 0, 1 CM., and let a be a finite complex number, and $a\neq 0, 1$. If a is lacunary for f, then $1-a$ is lacunary for g, and*

$$(f-a)(g+a-1)\equiv a(1-a).$$

In [4] the present author proved the following result which is an improvement of the above result.

THEOREM B. *Let f and g be two distinct nonconstant entire functions such that f and g share 0, 1 CM., and let a be a finite complex number, and $a\neq 0, 1$.*

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