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Meromorphic functions sharing one value. (English) Zbl 1093.30024
Int. J. Math. Math. Sci. 2005, No. 22, 3587-3598 (2005).

We discuss the uniqueness problem of meromorphic functions sharing one value and obtain two theorems which improve a result of Xu and Qu and supplement some other results earlier given by Yang, Hua, and Lahiri. Let f and g be meromorphic functions in the complex plane, and let n be an integer. The author considers uniqueness problems of meromorphic functions with some conditions in $f^n f'$ and $g^n g'$. In this paper the author obtains two main results. Here the reviewer mentions one of them. Suppose that f and g satisfy

$$n > 22 - 5(\Theta(\infty, f) + \Theta(\infty, g)) - \min\{\Theta(\infty, f), \Theta(\infty, g)\}.$$

If for $a \in \mathbb{C} \setminus \{0\}$, $f^n f'$ and $g^n g'$ share a IM, then either $f = dg$ for some $n + 1$ -th root of the unity of d or $g(z) = c_1 e^{cz}$ and $f(z) = c_2 e^{-cz}$, where c , c_1 , and c_2 are constants satisfying $(c_1 c_2)^{n+1} c^2 = -a^2$. This result is an improvement for the theorem in [Y. Xu and H. Qu, Entire functions, sharing one value IM. *Indian J. Pure Appl. Math.* 31, No. 7, 849–855 (2000; [Zbl 0964.30015](#))]. The main tools of the proofs are the value distribution theory.

Reviewer: [Katsuya Ishizaki \(Saitama\)](#)

MSC:

[30D35](#) Value distribution of meromorphic functions of one complex variable, Cited in **35** Documents
Nevanlinna theory

Keywords:

[sharing value](#); [differential monomials](#); [Nevanlinna theory](#); [uniqueness problem](#); [meromorphic functions](#)

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