

Uniqueness Theory of Meromorphic Functions (Mathematics and Its Applications)

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ON MEROMORPHIC FUNCTIONS THAT SHARE A SMALL FUNCTION WITH ITS DERIVATIVES

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ABSTRACT. In this paper, we study the problem of meromorphic functions sharing a small function with its derivative and prove one theorem. The theorem improves the results of Jin-Dong Li and Guang-Xin Huang [10].

1. INTRODUCTION

Let f be a nonconstant meromorphic function defined in the whole complex plane \mathbb{C} . It is assumed that the reader is familiar with the notations of the Nevanlinna theory such as $T(r, f)$, $N(r, f)$ and so on, that can be found, for instance in [1].

Let f and g be two nonconstant meromorphic functions. Let a be a finite complex number. We say that f and g share the value a CM (counting multiplicities) if $f - a$ and $g - a$ have the same zeros with the same multiplicities and we say that f and g share the value a IM (ignoring multiplicities) if we do not consider the multiplicities. When f and g share 1 IM, let z_0 be a 1-point of f of order p , a 1-point of g of order q , we denote by $N_{11}(r, \frac{1}{f-z_0})$ the counting function of those 1-points of f and g where $p = q = 1$; and $N_{12}^p(r, \frac{1}{f-z_0})$ the counting function of those 1-points of f and g where $p = q \geq 2$. $\bar{N}(r, \frac{1}{f-z_0})$ is the counting function of those 1-points of both f and g where $p > q$. In the same way, we can define $N_{11}(r, \frac{1}{g-z_0})$, $N_{12}^q(r, \frac{1}{g-z_0})$ and $\bar{N}(r, \frac{1}{g-z_0})$. If f and g share 1 IM, it is easy to see that

$$\begin{aligned} \bar{N}(r, \frac{1}{f-z_0}) &= N_{11}(r, \frac{1}{f-z_0}) + \bar{N}_L(r, \frac{1}{f-z_0}) + \bar{N}_L(r, \frac{1}{g-z_0}) + N_{12}^2(r, \frac{1}{g-z_0}) \\ &= \bar{N}(r, \frac{1}{g-z_0}) \end{aligned}$$

Let f be a nonconstant meromorphic function. Let a be a finite complex number, and k be a positive integer, we denote by $N_{\leq k}(r, \frac{1}{f-a})$ (or $\bar{N}_{\leq k}(r, \frac{1}{f-a})$) the counting function for zeros of $f - a$ with multiplicity $\leq k$ (ignoring multiplicities), and by $N_{\leq k}(r, \frac{1}{f-a})$ (or $\bar{N}_{\leq k}(r, \frac{1}{f-a})$) the counting function for zeros of $f - a$ with multiplicity

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27

Mathematics and Its Applications This book is the first monograph in the field of uniqueness theory of meromorphic functions dealing with conditions under.16 Meromorphic functions with two Picard exceptional values. 17 Theorems . Functions Volume of Mathematics and Its Applications, ISSN Uniqueness theory of meromorphic functions. Front Cover Science Press, - Mathematics - pages Volume of Mathematics and its applications.Computers & Mathematics with Applications Using Nevanlinna value distribution theory, we study the uniqueness of meromorphic functions concerning.Computers & Mathematics with Applications In this paper, we shall study the uniqueness problems of meromorphic functions sharing a small function. with the standard notion used in the Nevanlinna value distribution theory such as, and., English, Book edition: Uniqueness theory of meromorphic functions / by Chung-Chun Mathematics and its applications ; v. Basic Nevanlinna Theory.Booktopia has Uniqueness Theory of Meromorphic Functions, Mathematics and Its Applications by Chung-Chun Yang. Buy a discounted Paperback of.ON THE UNIQUENESS THEORY OF ENTIRE FUNCTIONS AND THEIR. 2/ 27 For a meromorphic function $f(z)$, we define its difference operators by. $\rho_f(z) = f(z) \dots$ functions, Mathematics and its Applications, Kluwer.Keywords: meromorphic function, uniqueness theory, shared values, Nevanlinna theory, shift, difference, logarithmic .. In Mathematics and its Applications, Vol.gate the uniqueness of transcendental meromorphic functions with the past nine decades, the so called uniqueness theory of meromorphic .. [4] J. K. Langley, An application of the Tsuji characteristic, J. Fac. Sci. Univ. Tokyo. Sect. IA Math.Mathematics and Its Applications Jinan, Shandong, China This book is the first monograph in the field of uniqueness theory of meromorphic functions dealing.[25] Ha Huy Khoai, Some remarks on the genericity of unique range sets for meromorphic functions. Sci. [26] Ha Huy Khoai and My Vinh Quang, p-adic Nevanlinna Theory, Lecture Notes in Math. Mathematics and its Applications, Yi, H. X. and Yang, C. C., Uniqueness theory of meromorphic functions, Mathematics and Its Applications, Science Press/Kluwer Academic Publishers, Math. Commun. 20(), 97 Uniqueness and value distribution for g-shifts of scendental meromorphic functions with zero order and obtain some results which standard notations of Nevanlinna value distribution theory, such as the proximity rithmic derivative with applications to difference equations, J. Math.Certain estimates involving the derivative $f' > f$ of a meromorphic function play key roles in the construction and applications of classical Nevanlinna theory. Recently, there has Mathematics Subject Classification. 30D Key words.We investigate the value distribution and uniqueness problems of difference on the logarithmic derivative with applications to difference equations, Ann. Math. H. X. Yi, Uniqueness theory of meromorphic functions, Mathematics and its.Recently several papers have focussed on the Nevanlinna theory with respect to uniqueness of meromorphic functions sharing values with their shifts or rivative with applications to difference equations, J. Math. Anal.The uniqueness theory of meromorphic function mainly studies conditions under

applications to difference equations. J. Math. Anal. Appl., , meromorphic functions sharing a finite value with their derivatives. The results in this We adopt the standard notations in the Nevanlinna theory ?Department of Mathematics, Kalyani Government Engineering College, Nadia, West Bengal [10] L. Z. Yang, Solution of a differential equation and its applications, Kodai. Keywords: Uniqueness; meromorphic function; weighted sharing.; 30D35 Yang , Uniqueness theory of meromorphic functions, Science Press, a small function and its applications, Comput. Math. Appl., 61(),

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