

A PRECISE INEQUALITY OF DIFFERENTIAL POLYNOMIALS RELATED TO SMALL FUNCTIONS

JUNFENG XU AND HONGXUN YI

Abstract. In this paper, we consider the value distribution of the differential polynomials $\varphi f^2 f' - 1$ where f is a transcendental meromorphic function and φ is a small function, and obtain a precise inequality by the reduced counting function.

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REFERENCES

- [1] W. K. HAYMAN, *Meromorphic functions*, Clarendon Press, Oxford, 1964.
- [2] I. LAINE, *Nevanlinna theory and complex differential equations*, Walter de Gruyter, Berlin-New York, 1993.
- [3] E. MUES, *Ueber ein problem von Hayman*, *Math. Z.*, **164**, (1979), 239–259.
- [4] J. F. XU, H. X. YI AND Z. L. ZHANG, *Some inequalities of differential polynomials II*, *Mathematical Inequalities and Applications*, **14**, 1 (2011), 93–100.
- [5] K. YAMANOI, *The second main theorem for small functions and related problems*, *Acta Math.*, **192**, (2004), 225–294.
- [6] C. C. YANG AND H. X. YI, *Uniqueness Theory of Meromorphic Functions*, New York, Dordrecht, Boston, London, 2003.
- [7] L. YANG, *Value distribution theory*, Springer, Berlin, Heidelberg, New York, 1993.
- [8] Q. D. ZHANG, *A growth theorem for meromorphic functions*, *J. Chengdu Inst. Meteor.*, **20**, (1992), 12–20.
- [9] Q. D. ZHANG, *On the zeros of the differential polynomial $\varphi(z)f^2(z)f'(z) - 1$ of a transcendental meromorphic functions*, *J. Chengdu Inst. Meteor.*, **23**, (1992), 9–17.