

## SOME INEQUALITIES OF DIFFERENTIAL POLYNOMIALS

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*Abstract.* In this paper, we consider the value distribution of the differential polynomials  $f^n f^{(k)} - 1$  where  $n(\geq 2), k$  are positive integers, and obtain some estimates only by the reduced counting function.

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### REFERENCES

- [1] A. M. ALOTAIBI, *On the zero of  $af f^{(k)} - 1$* , Complex Var. Theory Appl. **49** (2004), no. 13, 977–989.
- [2] W. BERGELER AND A. EREMENKO, *On the singularities of the inverse to a meromorphic function of finite order*, Rev. Mat. Iberoamericana., **11**(1995), 355–373.
- [3] H. H. CHEN AND M. L. FANG, *On the value distribution of  $f^n f'$* , Sci. China. Ser. A., **38**(1995), 789–798.
- [4] J. CLUNIE, *On integral and meromorphic functions*, J. London Math. Soc., **37**(1962), 17–27.
- [5] F. GACKSTATTER, I. LAINE, *Zur Theorie der gewöhnlichen Differentialgleichungen im Komplexen*, Ann. Polon. Math., **38** (1980), 259–287.
- [6] W. W. GOLUBEW, *Vorlesungen Über differentialgleichung im komplexem*, Berlin, Dduerscher Verlag der Wissenschaften, 1958.
- [7] W. K. HAYMAN, *Meromorphic functions*, Clarendon Press, Oxford, 1964.
- [8] W. HENNEKEMPER, *Über die Wertverteilung von  $(f^{k+1})^{(k)}$* , Math. Z., **177**(1981), 375–380.
- [9] X. J. HUANG AND Y. X. GU, *On the value distribution of  $f^2 f^{(k)}$* , J. Aust. Math. Soc., **78**(2005), 17–26.
- [10] I. LAINE, *Nevanlinna theory and complex differential equations*, Walter de Gruyter, Berlin-New York, 1993.
- [11] J. P. WANG, *On the distribution of  $ff^{(k)}$* , Kyungpook Math. J., **46**(2006), 169–180.
- [12] J. F. XU AND Z. L. ZHANG, *Note on normal family*, J. Inequal. Pure and Appl. Math., Volume 7, Issue 4, Art 133, 2006.
- [13] K. YAMANAI, *The second main theorem for small functions and related problems*, Acta Math., **192** (2004), 225–294.
- [14] C. C. YANG AND P. C. HU, *On the distribution of  $ff^{(k)}$* , Kodai Math. J., **19** (2) (1996), 157–167.
- [15] C. C. YANG AND H. X. YI, *Uniqueness Theory of Meromorphic Functions*, New York, Dordrecht, Boston, London, 2003.
- [16] L. YANG, *Value distribution theory*, Springer, Berlin, Heidelberg, New York, 1993.
- [17] Z. L. ZHANG, W. LI, *Picard exceptional values for two class differential polynomials*, Acta Math. Sinica., **34**(1994), 828–835.