

## VALUE DISTRIBUTION OF A CLASS OF COMPLEX $q$ -DIFFERENCE-DIFFERENTIAL POLYNOMIALS

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**Abstract.** In this paper, by employing Nevanlinna theory, we investigate the Borel exceptional values of a class of  $q$ -difference-differential polynomials of meromorphic functions. Our results generalize the results obtained by X. M. Zheng and M. L. Zhan.

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### REFERENCES

- [1] W. BERGWELER, A. EREMENKO, *On the singularities of the inverse to a meromorphic function of finite order*, Rev. Mat. Iberoam. **11** (1995), 355–373.
- [2] Z. X. CHEN, *On value distribution of difference polynomials of meromorphic functions*, Abstr. Appl. Anal. **2011** (2011), Art. ID 239853.
- [3] Z. X. CHEN, Z. B. HUANG, X. M. ZHENG, *On properties of difference polynomials*, Acta Math. Sci. **31** (2011), 627–633.
- [4] W. K. HAYMAN, *Meromorphic Functions*, Clarendon, Oxford, 1964.
- [5] W. K. HAYMAN, *Picard values of meromorphic functions and their derivatives*, Ann. Math. **70** (1959), 9–42.
- [6] I. LAINE, *Nevanlinna theory and complex differential equations*, de Gruyter, Berlin, 1993.
- [7] K. LIU, X. G. QI, *Meromorphic solutions of  $q$ -shift difference equations*, Ann. Polon. Math. **101** (2011), 215–225.
- [8] E. MUES, *Über ein problem von Hayman*, Math. Z. **164** (1979), 239–259.
- [9] N. XU, T. B. CAO AND K. LIU, *Value distribution of  $q$ -difference differential polynomials of entire functions*, J. Adv. Difference Equ. **2014** (2014), Art. 80.
- [10] C. C. YANG, H. X. YI, *Uniqueness Theory of Meromorphic Functions*, Dordrecht: Springer Netherlands, 2003.
- [11] X. M. ZHENG AND M. L. ZHAN, *Value distribution of some kind of  $q$ -shift-difference-differential polynomials*, J. Nanchang Univ. Nat. Sci., **45** (2021), 331–335.
- [12] M. ZHU, J. F. CHEN, *On meromorphic solutions of nonlinear complex difference equations*, Bull. Malays. Math. Sci. Soc. **46** (2023), Paper No. 181.