

UNIQUENESS OF MEROMORPHIC FUNCTIONS THAT SHARE TWO PAIR OF SMALL FUNCTIONS IM

BISWAJIT SAHA AND SUBRATA PAL

ABSTRACT. In this paper, we investigate the sharing small functions problem that meromorphic function $f(z)$ and its differential polynomial $L(f)$ share two pair of small functions IM. It generalizes and improve the result X. Huang, B. Deng, M. Fang: *Entire functions that share two pairs of small functions*, Open Math., **19**(2021), No. 1, 144-156.

REFERENCES

- [1] R.G. Halburd and R.J. Korhonen: *Difference analogue of the lemma on the logarithmic derivative with application to difference equations*, J. Math. Anal. Appl., **314**(2006), 477-487.
- [2] W.K. Hayman: *Meromorphic Functions*, The Clarendon Press, Oxford, 1964.
- [3] X. Huang and M. Fang: *Unicity of entire functions concerning their shifts and derivatives*, Comput. Methods Funct. Theory, **3**(2021), No. 3, 523-532.
- [4] X. Huang, B. Deng and M. Fang: *Entire functions that share two pairs of small functions*, Open Math., **19**(2021), No. 1, 144-156.
- [5] Z. Huang and R. Zhang: *Uniqueness of the difference of meromorphic function*, Anal. Math., **44**(2018), No. 4, 461-473.
- [6] L. Ma, D. Liu and M. Fang: *Uniqueness of meromorphic functions concerning sharing two small functions with their derivatives*, J. Appl. Anal. Comput., **10**(2020), No. 2, 713-728.
- [7] I. Laine: *Nevanlinna Theory and Complex Differential Equations*, Walter de Gruyter and Co., Berlin, 1993.
- [8] S. Majumder: *Uniqueness and value distribution of difference of meromorphic functions*, Appl. Math. E-Notes, **17**(2017), 114-123.
- [9] G. Qiu: *Uniqueness of entire functions that share some small functions*, Kodai Math. J., **23**(2000), No. 1, 1-11.
- [10] P. Sahoo and G. Biswas: *Meromorphic functions that share a set of small functions with its derivative*, Mat. Stud., **46**(2016), No. 2, 130-136.
- [11] H.P. Waghmare and S. Anand: *Uniqueness of meromorphic functions with their derivatives sharing a small function*, Tbilisi Math. J., **10**(2017), No. 2, 145-155.
- [12] P. Wang and L. Liao: *On entire and meromorphic functions that share small functions with their derivatives*, Int. J. Appl. Math. Anal. Appl., **11**(2016), No. 1, 97-106.
- [13] C. Yang: *On deficiencies of differential polynomials*, II, Math. Z., **125**(1972), 107-112.
- [14] C. Yang and H. Yi: *Uniqueness Theory of Meromorphic Functions*, Kluwer Academic Publishers Group, Dordrecht, 2003.
- [15] L. Yang: *Value Distribution Theory*, Springer-Verlag, Berlin, 1983.
- [16] L. Yang and X. Qi: *Uniqueness of meromorphic functions concerning their shifts and derivatives*, Comput. Methods Funct. Theory, **20**(2020), No. 1, 159-178.

Received: February 14, 2026. *Revised:* July 17, 2026.

2020 Mathematics Subject Classification: 34A34, 34M05, 30D35.

Key words and phrases: Uniqueness, small function, linear differential operator, meromorphic function.

Government General Degree College at Pedong
Department of Mathematics
Pedong, Kalimpong, West Bengal, India Pin-734311
Email address: sahaanjan11@gmail.com, sahabiswajitku@gmail.com

Sahebpara Malithapara Primary School
Karimpur New Circle, Natidanga
Nadia, West Bengal, India Pin-741152
Email address: subratapal.pal1993@gmail.com