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ESTIMATE COEFFICIENTS FOR SUBCLASSES OF MEROMORPHIC BI-UNIVALENT FUNCTIONS INVOLVING THE POLYLOGARITHM FUNCTION

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Abstract. In this paper we introduce a new operator $\Omega_c g(z)$ associated with polylogarithm function. Applying it on the subclasses$N_{\sum_B^*}(\alpha, k)$ of meromorphic starlike bi-univalent functions of order α, and $N_{\widetilde{\sum}_B^*}(\alpha, k)$ of meromorphic strongly starlike bi-univalent functions of order α , also we find estimates on the coefficients $|b_0|$ and $|b_1|$for functions in these subclasses.

References

[1] K.R. Alhindi, and M. Darus, *A New Class of Meromorphic Functions Involving the Polylogarithm Function*, J. Complex Anal., Article ID 864805, 2014, 5 pages.

[2] R.M. Ali, S.K. Lee, V. Ravichandran, S. Supramaniam, *Coefficient estimates for bi-univalent Ma-Mindastarlike and convex functions*, preprint, 1980.

[3] D.A. Brannan and J.G. Clunie, *Aspects of contemporary complex analysis*, (Proceedings of the NATO Advanced Study Instituteheld at the university of Durham, Durham,July 12, 1979), Academic Press, London and New York, 1980.

[4] D.A. Brannan and T.S.Taha, *On some classesof bi-univalent functions*, Studia Univ. Babes- Bolyai Math. 31, no. 2, 1986, pp. 70-77.

[5] P.L.Duren, *Coefficients of meromorphic schlicht functions*, Proc. Amer. Math. Soc., 28, 1971, pp. 169-172.

[6] B.A.Frasin, M.K.Aouf, *New subclasses of bi-univalent functions*, Appl. Math. Lett., 24 (9), 2011, p. 1569-1573.

[7] A.W.Goodman, *Univalent functions*, Vol. 1, Polygonal Puplishing House, Washington, New Jersey, 1983.

[8] S. A. Halim, S. G. Hamidi and V. Ravichandran, *Coefficient estimates for meromorphic bi-univalent functions*, arXiv:1108.4089v1 [math.CV], 2011.

[9] A.S. Juma and F.S.Aziz, *Applying Ruscheweyh derivative on two sub-classes of bi-univalent functions*, Inter. J. of Basic and Appl. Sci., V., 12 no.06, 2012, pp. 68-74.

[10] A.S. Juma and F.S.Aziz, *Estimating Coefficient for Subclass of Meromorphic Bi-Univalent Functions associated with linear operator*, TWMS J. App. Eng. Math. V.4, no.1, 2014, pp. 39-44.

[11] G.P. Kapoor and A.K. Mishra, *Coefficient estimates for inverses of starlike functions of positiveorder*, J. Math. Anal. Appl., 329 , no. 2, 2007, pp. 922-934.

[12] Y.Kubota, *Coefficients of meromorphic univalent functions*, Kodai Math. Sem. Rep., 28, no. 2-3, 1976-77, pp. 253-261.

[13] M.Lewin, *On a coefficient problem for bi-univalent functions*, Proc. Amer.Math. Soc. 18, 1967, pp. 63-68.

[14] J. Liu and H.M. Srivastava, *Classes of meromorphically multivalent functions associated with the generalized hypergeometricfunction*, Math. Comput. Modelling, vol. 39, no.1, 2004, pp. 21- 34.

[15] E.Netanyahu, *The minimal distance of the image boundary from the origin and the second coefficient of a univalent function in* $|z| < 1$, Arch. Rational Mech. Anal. 32, 1969, pp. 100-112.

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[16] M.Schiffer, *Sur un probl'emed'extremum de la representationconforme*, Bull. Soc. Math. France, 66, 1938, pp. 48-55.
[17] G.Schober, *Coefficients of inverses of meromorphic univalent functions*, Proc. Amer. Math. Soc., 67, no. 1, 1977, pp. 111-116.
[18] G.Springer, *The coefficient problem for schlicht mappings of the exterior of the unit circle*, Trans. Amer. Math. Soc., 70, 1951, pp. 421-450.
[19] H.M. Srivastava, A.K. Mishra, P. Gochhayat, *Certain subclasses of analytic and bi-univalent functions*, Appl. Math. Lett., 23, no. 10, 2010, pp. 1188-1192.
[20] T.S. Taha, *Topics in univalent function theory*, Ph.D. Thesis, University of London, 1981.

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