

CERTAIN SUBORDINATION RESULTS INVOLVING A GENERALIZED MULTIPLIER TRANSFORMATION OPERATOR

POONAM SHARMA, J. K. PRAJAPAT AND R. K. RAINA

Abstract. This paper investigates various new subordination results for certain p -valent analytic functions involving a generalized multiplier transformation operator $J_p^m(\lambda, l)$, $m \in \mathbb{Z}$, defined recently by J. K. Prajapat [Math. Comput. Modelling, 55 (2012), 1456–1465]. Several lines of approach are followed to obtain the subordination results. We also consider some simpler and precise forms of the derived results.

Mathematics subject classification (2010): 30C45, 30C50.

Keywords and phrases: Analytic functions, univalent functions, convolution, subordination.

REFERENCES

- [1] M. ABRAMOWITZ AND I. A. STEGUN (Editors), *Handbook of Mathematical Functions and Formulas, Graphs and Mathematical Tables*, Dover publications, New York, 1971.
- [2] M. K. AOUF, A. O. MOSTAFA AND R. EL-ASHWAH, *Sandwich theorem of analytic functions defined by a certain integral operator*, Math. Comp. Modelling, **53** (9–10), (2011), 1647–1653.
- [3] A. CĂTAŞ, *On certain classes of p -valent functions defined by multiplier transformations*, in Proceedings of the international Symposium on Geometric Function Theory and Applications: GFTA 2007 (Eds. S. Owa, Y. Polatoglu), TC Istanbul University Publications, Turkey, 2008, pp. 241–250.
- [4] J. DZIOK AND H. M. SRIVASTAVA, *Certain subclasses of analytic functions associated with the generalized hypergeometric functions*, Integral Transform Spec. Funct., **14** (2003), 7–18.
- [5] R. M. EL-ASHWAH AND M. K. AOUF, *Some properties of new integral operator*, Acta Univ. Apulensis Math. Inform., **24** (2010), 51–61.
- [6] D. I. HALLENBECK, ST. RUSCHEWEYH, *Subordination by convex functions*, Proc. Amer. Math. Soc., **52** (1975), 191–195.
- [7] I. B. JUNG, Y. C. KIM AND H. M. SRIVASTAVA, *The Hardy space of analytic functions associated with certain one-parameter families of integral operators*, J. Math. Anal. Appl., **179** (1993), 138–147.
- [8] S. S. KUMAR, H. C. TANEJA AND V. RAVICHANDRAN, *Classes of multivalent functions defined by Dzioik-Srivastava linear operator and multiplier transformations*, Kyungpook Math. J., **46** (2006), 97–109.
- [9] JIN-LIN LIU, *Notes on Jung-Kim-Srivastava integral operator*, J. Math. Anal. Appl., **294** (1), (2004), 96–103.
- [10] T. H. MACGREGOR, *The radius of univalence of certain analytic functions*, Proc. Amer. Math. Soc., **14** (1963), 514–520.
- [11] S. S. MILLER, P. T. MOCANU, *Differential Subordinations*, Theory and Applications, Marcel Dekker Inc., New York, Basel, 2000.
- [12] S. S. MILLER AND P. T. MOCANU, *On some classes of first order differential subordination*, Michigan Math. J., **32** (1985), 185–195.
- [13] H. ORHAN AND H. KIZILTUNC, *A generalization on subfamily of p -valent functions with negative coefficients*, Appl. Math. Comput., **155** (2004), 521–530.
- [14] J. PATEL AND P. SAHOO, *Certain subclasses of multivalent analytic functions*, Indian J. Pure Appl. Math., **34** (3), (2003), 487–500.
- [15] J. K. PRAJAPAT, *Subordination and superordination preserving properties for generalized multiplier transformation operator*, Math. Comput. Modelling, **55** (2012), 1456–1465.

- [16] M. S. ROBERTSON, *Certain classes of starlike functions*, Michigan Math. J., **32** (1985), 135–140.
- [17] W. ROGOSINSKI, *On the coefficients of subordinate functions*, Proc. London Math. Soc., (Ser.2) **48** (1943) 48–82.
- [18] G. S. SĂLĂGEAN, *Subclasses of univalent functions*, Lecture Notes in Math. (Springer-Verlag), **1013** (1983), 362–372.
- [19] R. SINGH, *On Bazilevič functions*, Proc. Amer. Math. Soc., **38** (1973), 261–271.
- [20] H. M. SRIVASTAVA, M. K. AOUF AND RM. EL-ASHWAH, *Some inclusion relationships associated with a certain class of integral operators*, Asian-Europ. J. Math., **3** (4), (2010), 667–684.
- [21] H. M. SRIVASTAVA AND S. OWA (Editors), *Current Topics in Analytic Function Theory*, pp. 266–273, World Scientific Publishing Company, Singapore, New Jersey, London and Hongkong, 1992.
- [22] ZHI-GANG WANG, R. AGHALARY, M. DARUS AND R. W. IBRAHIM, *Some properties of certain multivalent analytic functions involving the Cho–Kwon–Srivastava operator*, Math. Comput. Modelling, **49** (2009), 1969–1984.