

SUBORDINATION PROPERTIES
FOR SPECIAL INTEGRAL OPERATORS

KAZUO KUROKI and SHIGEYOSHI OWA

Abstract. Applying the Integral Existence Theorem for normalized analytic functions concerning the existence and analyticity of a general integral operator which was proven by S. S. Miller and P. T. Mocanu (J. Math. Anal. Appl. **157** (1991), 147–165), the analyticity and univalence of the functions defined by a certain special integral operator is discussed, and some interesting subordination criteria concerning with several integral operators are obtained.

MSC 2010. 34C40.

Key words. Differential subordination, integral operator, analyticity and univalence, integral existence theorem, spirallike function, subordination chain.

REFERENCES

- [1] BAZILEVIČ, I.E., *On a case of integrability in quadratures of the Loewner-Kufarev equation*, (Russian) Mat. Sb. N.S., **37** (79) (1955), 471–476.
- [2] MILLER, S.S. and MOCANU, P.T., *Differential subordinations and univalent functions*, Michigan Math. J., **28** (1981), 157–171.
- [3] MILLER, S.S. and MOCANU, P.T., *Classes of univalent integral operators*, J. Math. Anal. Appl., **157** (1991), 147–165.
- [4] MILLER, S.S. and MOCANU, P.T., *Differential Subordinations*, Pure and Applied Mathematics, **225**, Marcel Dekker, 2000.
- [5] MILLER, S.S., MOCANU, P.T. and READE, M.O., *All α -convex functions are univalent and starlike*, Proc. Amer. Math. Soc., **37** (1973), 553–554.
- [6] MILLER, S.S., MOCANU, P.T. and READE, M.O., *Starlike integral operators*, Pacific J. Math., **79** (1978), 157–168.
- [7] MOCANU, P.T., *Une propriété de convexité généralisée dans la théorie de la représentation conforme*, Mathematica (Cluj), **11** (34) (1969), 127–133.
- [8] POMMERENKE, CH., *Univalent Functions*, Vanderhoeck & Ruprecht, Göttingen, 1975.
- [9] SAKAGUCHI, K., *A note on p -valent functions*, J. Math. Soc. Japan, **14** (1962), 312–321.
- [10] SAKAGUCHI, K. and FUKUI, S., *On α -starlike functions and related functions*, Bull. Nara Univ. Ed. Natur. Sci., **28** (1979), 5–12.

Kinki University
Department of Mathematics
Higashi-Osaka, Osaka 577-8502, Japan
E-mail: freedom@sakai.zaq.ne.jp
E-mail: owa@math.kindai.ac.jp