

Univalence conditions and properties of a new general integral operator

ROBERTA BUCUR and DANIEL BREAZ

ABSTRACT.

In this paper, we obtain univalence conditions and the order of convexity of a new general integral operator defined on the space of normalized analytic functions in the open unit disk U . Also, we give some other properties on the class $N(\varphi)$. Results presented in this paper may motivate further research in this fascinating field.

REFERENCES

- [1] Alexander, J. W., *Functions which map the interior of the unit circle upon simple regions*, Ann. of Math., **17** (1915), 12–22
- [2] Becker, J., *Löwnersche Differentialgleichung und quasi-konform fortsetzbare schlichte funktionen*, J. Reine Angew. Math., **255** (1972), 23–43
- [3] Breaz, D., *Certain integral operators on the classes $M(\beta_i)$ and $N(\beta_i)$* , J. Inequal. Appl., Vol. 2008, Article ID 719354 (2008), 4 pg.
- [4] Breaz, D., Owa, S. and Breaz, N., *A new integral univalent operator*, Acta Univ. Apulensis Math. Inform., **16** (2008)
- [5] Bucur, R., Andrei, L. and Breaz, D., *Geometric Properties of a New Integral Operator*, Abstr. Appl. Anal., Vol. 2015, Article ID 430197 (2015), 6 pg.
- [6] Bucur, R., Andrei, L. and Breaz, D., *Univalence criterion, starlikeness and convexity for a new integral operator*, Int. Electron. J. Pure Appl. Math., **9** (2015), No. 3, 215–223
- [7] Frasin, B. A. and Breaz, D., *Univalence conditions of general integral operator*, Mat. Vesnik, **65** (2013), No. 3, 394–402
- [8] Frasin, B. A. and Jahangiri, J., *A new and comprehensive class of analytic functions*, An. Univ. Oradea, Fasc. Mat. **XV** (2008), 59–62
- [9] Frasin, B. A. and Darus, M., *On certain analytic univalent functions*, Int. J. Math. Math. Sci., **25** (2001), No. 5, 305–310
- [10] Mayer, O., *The functions theory of one variable complex*, Bucuresti, 1981
- [11] Mocanu, P. T. and Şerb, I., *A sharp simple criterion for a subclass of starlike functions*, Complex Variables Theory Appl., **32** (1997), No. 2, 161–168
- [12] Oprea, A. and Breaz, D., *Univalence conditions for two general integral operators*, Adv. in Pure Math., **4** (2014), No. 8, 487–493
- [13] Owa, S. and Srivastava, H. M., *Some generalized convolution properties associated with certain subclasses of analytic functions*, J. Inequal. Pure Appl. Math., **3** (2002), No. 3, Art. 42, 1–13
- [14] Pascu, N. N. and Pescar, V., *On the integral operators of Kim-Merkes and Pfaltzgraff*, Stud. Univ. Babeş-Bolyai Math., **32** (1990), No. 2, 185–192
- [15] Pescar, V., *Some Integral Operators and Their Univalence*, J. Anal., **5** (1997), 157–162
- [16] Pescar, V., *New univalence criteria for some integral operators*, Stud. Univ. Babeş-Bolyai Math., **59** (2014), No. 2, 167–176
- [17] Pfaltzgraff, J., *Univalence of the integral of $(f'(z))^\lambda$* , Bull. Lond. Math. Soc., **7** (1975), No. 3, 254–256
- [18] Study, E., *Vorlesungen über ausgewählte Gegenstände der Geometrie*, 2. Heft, Teubner, Leipzig und Berlin, 1913

Received: 23.05.2015; In revised form: 04.03.2016; Accepted: 11.03.2016

2010 Mathematics Subject Classification. 30C45, 30C75.

Key words and phrases. Analytic functions, univalent functions, Starlike functions, convex functions, integral operator, General Schwarz Lemma.

Corresponding author: Roberta Bucur; roberta_bucur@yahoo.com

- [19] Ularu, N. and Breaz, D., *Univalence criterion and convexity for an integral operator*, Appl. Math. Lett., **25** (2012), 658–661
- [20] Ularu, N. and Breaz, D., *Univalence condition and properties for two integral operators*, Appl. Sci., **15** (2013), 658–661
- [21] Uralegaddi, A, Ganigi, M. D. and Sarangi, S. M., *Univalent functions with positive coefficients*, Tamkang J. Math., **25** (1994), No. 3, 225–230
- [22] Wilken, D. R. and Feng, J., *A remark on convex and starlike functions*, J. Lond. Math. Soc. (2), **21** (1980), No. 2, 287–290

DEPARTMENT OF MATHEMATICS
UNIVERSITY OF PITEŞTI
STR. TÂRGUL DIN VALE 1, R-110040 PITEŞTI, ROMANIA
E-mail address: roberta_bucur@yahoo.com

DEPARTMENT OF MATHEMATICS
"1 DECEMBRIE 1918" UNIVERSITY OF ALBA IULIA
STR. N. IORGA 11-13, R-510009 ALBA IULIA, ROMANIA
E-mail address: dbreaz@uab.ro