

**CERTAIN NEW CLASS OF CONCAVE FUNCTIONS DEFINED BY
SĂLĂGEAN DIFFERENTIAL OPERATOR**
(Kelas Baharu Tertentu bagi Fungsi Cekung yang Ditakrif oleh Pengoperasi Pembezaan Sălăgean)

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ABSTRACT

In this article, we introduce a class of concave analytic functions $S^n C_0(\alpha)$ defined by Sălăgean differential operator. We study some properties like coefficient inequalities, distortion theorems and extreme points for this class.

Keywords: analytic function; concave function; Sălăgean differential operator; coefficient inequalities; distortion theorem; extreme points

ABSTRAK

Dalam makalah ini, suatu kelas fungsi analisis cekung $S^n C_0(\alpha)$ yang ditakrif oleh pengoperasi pembezaan Sălăgean diperkenalkan. Beberapa sifat seperti ketaksamaan pekali, teorem erotan dan titik ekstrem untuk kelas ini dikaji.

Kata kunci: fungsi analisis; fungsi cekung; pengoperasi pembezaan Sălăgean; ketaksamaan pekali; teorem erotan; titik ekstrem

References

- Aouf M.K., El-Ashwah R.M., Hassan A.A.M. & Hassan A.H. 2012. On subordination results for certain new classes of analytic functions defined by using Sălăgean operator. *Bulletin of Mathematical Analysis Functions and Applications* **4**(1): 239-246.
- Aouf M.K., El-Ashwah R.M. & Abdulkarem F.M. 2013. Certain classes of analytic functions defined by Sălăgean operator with varying arguments. *Electronic Journal of Mathematical Analysis and Applications* **1**(2): 355-360.
- Avkhadiiev F.G., Pommerenke Ch. & Wirths K-J. 2006. Sharp inequalities for the coefficient of concave schlicht functions. *Comment. Math. Helv.* **81**: 801-807.
- Avkhadiiev F.G. & Wirths K-J. 2005. Concave schlicht functions with bounded opening angle at infinity. *Lobachevskii J. Math.* **17**: 3-10.
- Bhowmik B., Ponnusamy S. & Wirths K-J. 2010. Characterization and the pre-Schwarzian norm estimate for concave univalent functions. *Monatsh. Math.* **161**: 59-75.
- Cruz L. & Pommerenke Ch. 2007. On concave univalent functions. *Complex Var. Elliptic Equ.* **52**: 153-159.
- Darus M. & Ibrahim R. 2008. Generalization of differential operator. *Journal of Mathematics and Statistics* **4**(3): 138-144.
- Eker S.S. & Seker B. 2007. On a class of multivalent functions defined by Sălăgean operator. *General Mathematics* **5**(2): 154-163.
- El-Ashwah R. M., Aouf M. K., Hassan A.A.M. & Hassan A.H. 2013. A new class of analytic functions defined by using Sălăgean operator. *International Journal of Analysis* **2013**, ID153128, 10 pp.
- Kim Y.C. & Srivastava H.M. 1997. Fractional integral and other linear operators associated with the Gaussian hypergeometric function. *Complex Var. Theory Appl.* **34**: 293-312.
- Kugita K., Kuroki K. & Owa S. 2010. (α, δ) - Neighborhood for functions associated with Sălăgean differential operator and Alexander integral operator. *Int. Journal of Math. Anal.* **4**(5): 211-220.
- Li S.H. & Tang H. 2010. Certain new classes of analytic functions defined by using the Sălăgean operator. *Bulletin of Mathematical Analysis and Applications* **2**(4): 62-75.
- Mahzoon H. & Latha S. 2009. A Note on certain classes of analytic functions defined by Sălăgean operator. *Int. Journal of Math. Analysis* **3**(13): 611-617.

- Noor K.I. 1999. On new classes of integral operators. *J. Nat. Geom.* **16**: 71-80.
- Noor K.I. & Noor M.A. 1999. On integral operators. *J. Math. Anal. Appl.* **238**: 341-352.
- Noor K.I. & Noor M.A. 2003. On certain classes of analytic functions defined by Noor integral operator. *J. Math. Anal. Appl.* **281**: 244-252.
- Oros G.I., Sendrutiu R. & Taut A.O. 2009. On a class of univalent functions defined by Sălăgean differential operator. *Banch Journal of Mathematical Analysis* **3**(1): 61-67.
- Ruscheweyh S. 1975. New criteria for univalent functions. *Proceeding of the American Mathematical Society* **49**: 109-115.
- Sălăgean G.S. 1983. Subclasses of univalent functions. *Lecture Notes in Math.* 1013: 362-372. Berlin: Springer-Verlag.
- Sun Y., Kuang W.P. & Wang Z.G. 2010. Coefficient inequalities for certain classes of analytic functions involving Sălăgean operator. *Acta Universitatis Apulensis* **21**: 105-112.

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