

**SOME RESULTS FOR THE CLASS OF ANALYTIC FUNCTIONS  
INVOLVING SALAGEAN DIFFERENTIAL OPERATOR**  
(Beberapa Sifat untuk Kelas Fungsi Analisis Melibatkan Pengoperasi Pembeza Salagean)

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**ABSTRACT**

Let  $T_n^\alpha(\beta)$  denote the class of function  $f(z) = z + \sum_{k=2}^{\infty} a_k z^k$ , analytic and univalent in the open unit disk  $U = \{z \in \mathbb{C} : |z| < 1\}$ , which are defined involving the Salagean differential operator  $D^n$ ,  $n \in \mathbb{N} \cup \{0\}$ , such that  $\operatorname{Re}(D^n f(z)^\alpha / z^\alpha) \geq \beta$ ,  $z \in U$ ,  $\alpha > 0$ ,  $0 \leq \beta < 1$ . In this paper, some properties such as a representation theorem and coefficient estimates for the class  $T_n^\alpha(\beta)$  are obtained.

*Keywords:* Salagean differential operator; coefficient estimate; representation theorem

**ABSTRAK**

Andaikan  $T_n^\alpha(\beta)$  kelas fungsi  $f(z) = z + \sum_{k=2}^{\infty} a_k z^k$ , analisis dan univalen pada cakera unit  $U = \{z \in \mathbb{C} : |z| < 1\}$ , yang tertakrif melibatkan pengoperasi pembeza Salagean  $D^n$ ,  $n \in \mathbb{N} \cup \{0\}$  sedemikian hingga  $\operatorname{Re}(D^n f(z)^\alpha / z^\alpha) \geq \beta$ ,  $z \in U$ ,  $\alpha > 0$ ,  $0 \leq \beta < 1$ . Dalam makalah ini, beberapa sifat fungsi  $f$  di dalam kelas  $T_n^\alpha(\beta)$  seperti teorem perwakilan dan anggaran pekali diperoleh.

*Kata kunci:* Pengoperasi pembeza Salagean, anggaran pekali, teorem perwakilan

**References**

- Salagean G. S. 1983. Subclass of Univalent Functions. *Lecture Note in Math.* Springer-Verlag: 362-372.
- Abdulhalim S. 2003. Coefficients estimates for functions in  $B_n(\alpha)$ . *IJMMS Hindawi Publishing Corp.* **59**: 3761-3767.
- Opoola T. O. 1994. On a new subclass of univalent functions. *Mathematica Tome 36*, **59**(2): 195-200.
- Kanas S. 1989. New subclasses of univalent functions. *Folia Scientiarum Univ. Tech. Resoviensis* **60**: 45-59.
- Obradovic M. 1992. On certain differential operator and some classes of univalent functions. *Seriya Mathematica* **6**: 107-112.
- Babalola K. O. & Opoola T. O. 2006. Integrated integral transform of Catatheodory functions and their applications to analytic and univalent functions. *Tamkang J. Math.* **37**(4): 355-366.
- Hayami T., Owa S. and Srivastava H. M. 2007. Coefficient inequalities for certain classes of analytic and univalent functions. *J. Ineq. In Pure and Appl. Math.* **8**(4): 1-21.
- Ahlfors L. V. 1966. *Complex Analysis*. 2<sup>nd</sup> Ed. New York: McGraw Hill Book Comp.
- Singh S., Gupta S. & Singh S. 2009. A general coefficient inequality. *General Maths.* **17**(3):99-104.

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