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THE STARLIKENESS OF A PARTICULAR CLASS OF INTEGRAL OPERATORS

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Let A be the class of all analytic functions f in the unit disc $U=\{z\in\mathbb{C} / |z|<1\}$, with $f(0)=0$ and $f'(0)=1$.

A function $f\in A$ is said to be starlike if $\mathrm{Re}[zf'(z)/f(z)]>0$ in U. We denote the class of starlike functions by S^*.

Let $g\in A$ with $g(z)/z\neq 0$ in U and let c be complex number with Re c>0. Consider the integral operators J_{g^c} on A defined by $F = J_{g^c}(f)$, where

$$(1)\qquad F(z)=\frac{c+1}{[g(z)]^c}\int_0^z f(t)\,\frac{[g(t)]^c}{t}\,dt\quad,\qquad z\in U\ ,\quad f\in A\ .$$

Making the substitution w=uz , (1) can be rewritten:

$$F(z)=(c+1)\left[\frac{z}{g(z)}\right]^c\int_0^1 f(uz)\left[\frac{g(uz)}{uz}\right]^c u^{c-1}du\quad,$$

where all powers are the principale ones. This shows that the integral operators J_{g^c} is well defined.

In this article we employ the method of admissible functions due to P.T.Mocanu and S.S.Miller [1] , [2] , [4] , to obtain sufficient conditions on g , so that $J_{g^c}(S^*)\subset S^*$.