ICM 1998, Berlin, Aug. 18–27

Abstracts of Short Communications and Posters

Section:

8. Analysis

1991 MS Classification: 30, 47

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Differential subordinations and univalent integral operators

Let $H(U)$ be the space of analytic functions in the unit disk U and let $h \in \mathcal{A} \subset H(U)$. We define the operator $A_{(\beta,\gamma),h} : \mathcal{K}_{(\beta,\gamma),h} \longrightarrow H(U)$, $\mathcal{K}_{(\beta,\gamma),h} \subset H(U)$, by $A_{(\beta,\gamma),h}(f)(z) = \left[\frac{\beta+\gamma}{h^{\gamma}(z)} \int_0^z f^{\beta}(t)\, h^{\gamma-1}(t)\, h'(t) dt\right]^{1/\beta}$. We proved that under different assumptions on h, the images of *alpha- convex functions* by the above operator are still in the same class. Then we determined the images of *Bazilevič functions* and, in particular, we obtained conditions such that the operator is *close-to-convexity* preserving. We introduced a class of analytic functions, called *strongly close-to-convex functions*, and we proved that their images are *Bazilevič functions.* Finally, we found simple conditions on h such that the images $A_{(\beta,\gamma),h}(\mathcal{K}_{(\beta,\gamma),h})$ are univalent functions.

References: T. Bulboacă, A class of integral operators for alpha-convex functions, *Mathematica (Cluj)*,38(61),1-2(1996),27-33 T. Bulboacă, Classes of integral operators on Bazilevič functions, /to appear/