On the Stablity of the solution of a certain nonlinear elliptic partial differential equations

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Abstract: This report is devoted to the functions which are solution of the nonlinear elliptic partial differential equation $\frac{\overline{f_{\overline{z}}}}{\overline{f}} = a\frac{f_z}{f}$ defined on the unit disc U, a analytic, and $a(U) \subset U$. Such functions are called logharmonic mappings.We study logharmonic mappings which are stable univalent, stable starlike, stable with positive real part , stable close to starlike and stable typically real. We prove that the mappings $f_\lambda = zh(z)\overline{g(z)}^{\lambda}$ are starlike logharmonic(resp. logharmonic univalent , close to starlike logharmonic, typically real logharmonic) for all $|\lambda| = 1$ if and only if the mappings $\varphi_\lambda = \frac{zh}{g^\lambda}$ are starlike analytic (resp. analytic univalent, close to starlike analytic, typically real analytic) for all $|\lambda| = 1$.

Keywords: Logharmonic mappings, stable, Starlike , Typicallyreal, univalent

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