1077-32-2683   **Jerry R. Muir*** (`muirj2@scranton.edu`), Department of Mathematics, University of Scranton, Scranton, PA 18510. *Necessary Conditions for the Existence of Higher Order Extensions of Univalent Mappings from the Disk to the Ball.* Preliminary report.

If $G : \mathbb{C}^{n-1} \to \mathbb{C}$ is a holomorphic function such that $G(0) = 0$ and $DG(0) = 0$ and f is a normalized univalent mapping of the unit disk $\mathbb{D} \subseteq \mathbb{C}$, we consider the normalized extension of f to the Euclidean unit ball $\mathbb{B} \subseteq \mathbb{C}^n$ given by $\Phi_G(f)(z) = (f(z_1) + G(\sqrt{f'(z_1)}\, \hat{z}), \sqrt{f'(z_1)}\, \hat{z})$, $z \in \mathbb{B}$, $\hat{z} = (z_2, \ldots, z_n)$. While for a given f, $\Phi_G(f)$ will maintain certain geometric properties of f, such as convexity or starlikeness, if G is a polynomial of degree 2 of sufficiently small norm, these properties may be lost whenever G contains a nonzero term of higher degree. By establishing separate necessary and sufficient conditions for the extension of Loewner chains from $\mathbb{D}$ to $\mathbb{B}$ through Φ_G, we are able to completely classify those starlike and convex mappings f on $\mathbb{D}$ for which there exists a G with nonzero higher degree terms such that $\Phi_G(f)$ is a mapping of the same type on $\mathbb{B}$. (Received September 22, 2011)

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