Convex sums of biholomorphic mappings and Extension operators in $\mathbb{C}^n$

Eduard Stefan Grigoriciuc
Babes-Bolyai University of Cluj-Napoca
eduard.grigoriciuc@ubbcluj.ro

Let $\mathbb{B}^n$ be the Euclidean unit ball in $\mathbb{C}^n$ and let U be the unit disc in $\mathbb{C}$. The aim of this work is to study convex combinations of biholomorphic mappings on $\mathbb{B}^n$ starting from a result proved by Chichra and Singh in the case of one complex variable. They obtained the conditions in which a convex combination of the form $(1-\lambda)f+\lambda g$ is starlike on U, when f and g are starlike on the unit disc U and $\lambda \in [0,1]$. Using this ideea, we can construct a similar result for the case of several complex variables. Then, we use this result to characterize convex sums of biholomorphic starlike mappings on the Euclidean unit ball $\mathbb{B}^n$. Moreover, we obtain some remarks on convex sums of extension operators defined for locally univalent functions (for example, the Graham-Kohr extension operator).