Function Theory on Diagonal Besov Spaces

We introduce the family of diagonal Besov spaces B_q^p of holomorphic functions in the unit ball of $\mathbb{C}^N$ with new parametrization. This family includes weighted Bergman spaces, Dirichlet spaces, the Hardy space H^2, the Arveson space, and the Bloch space as special cases. The two main subjects we discuss are the extended Bergman projections from Lebesgue classes to diagonal Besov spaces, and the Carleson measures on these spaces. Both depend on imbeddings of diagonal Besov spaces into Lebesgue classes via the operators $(1-|z|^2)^t D^t$, where D^t is a radial differential operator of order $t \in \mathbb{R}$ with $q + pt > -1$.