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ω -weighted holomorphic Besov spaces on the unit ball in C^n

Comment.Math.Univ.Carolin. 52,1 (2011) 37–56.

Abstract: The ω -weighted Besov spaces of holomorphic functions on the unit ball B^n in C^n are introduced as follows. Given a function ω of regular variation and $0 < p < \infty$, a function f holomorphic in B^n is said to belong to the Besov space $B_p(\omega)$ if

$$\|f\|_{B_p(\omega)}^p = \int_{B^n} (1 - |z|^2)^p |Df(z)|^p \frac{\omega(1 - |z|)}{(1 - |z|^2)^{n+1}} d\nu(z) < +\infty,$$

where $d\nu(z)$ is the volume measure on B^n and D stands for the fractional derivative of f . The holomorphic Besov space is described in the terms of the corresponding $L_p(\omega)$ space. Some projection theorems and theorems on existence of the inversions of these projections are proved. Also, explicit descriptions of the duals of the considered Besov spaces are given.

Keywords: weighted Besov spaces, unit ball, projection

AMS Subject Classification: 32C37, 47B38, 46T25, 46E15

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