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Functions of ω -Bounded Type in the Half-Plane

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Abstract. In this paper we introduce and investigate functions of ω -bounded type in the half-plane. We also investigate some properties of the Banach spaces $A_{\omega,\gamma}^p$ which are natural subsets of functions of ω -bounded type, as Hardy classes are in Nevanlinna's class N . The classes of δ -subharmonic functions of ω -bounded type are defined by a weighted integrability condition of Tsuji's characteristics. The canonical representations of these classes by some Green type potentials and an analog of Poisson integral are obtained. Particularly, these representations become canonical factorizations for the corresponding meromorphic classes of ω -bounded type. A theorem on the orthogonal projection from $L_{\omega,0}^2$ to $A_{\omega,0}^2$, a Paley-Wiener type theorem and a theorem on an explicitly written isometry between $A_{\omega,0}^2$ and the Hardy space H^2 are proved. Then a theorem on projection from the Lebesgue spaces $L_{\omega,0}^p$ to $A_{\omega,0}^p$ is proved.

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