WEIGHTED HARDY SPACES ASSOCIATED WITH ELLIPTIC OPERATORS. PART II: CHARACTERIZATIONS OF $H^1_L(w)$

José María Martell and Cruz Prisuelos-Arribas

Abstract: Given a Muckenhoupt weight w and a second order divergence form elliptic operator L, we consider different versions of the weighted Hardy space $H^1_L(w)$ defined by conical square functions and non-tangential maximal functions associated with the heat and Poisson semigroups generated by L. We show that all of them are isomorphic and also that $H^1_L(w)$ admits a molecular characterization. One of the advantages of our methods is that our assumptions extend naturally the unweighted theory developed by S. Hofmann and S. Mayboroda in [**19**] and we can immediately recover the unweighted case. Some of our tools consist in establishing weighted norm inequalities for the non-tangential maximal functions, as well as comparing them with some conical square functions in weighted Lebesgue spaces.