

Hardy type spaces associated with Schrödinger operators on domains and applications

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Abstract. Let Ω be a strongly Lipschitz domain of \mathbb{R}^n and $L_\Omega := -\Delta + V$ a Schrödinger operator on $L^2(\Omega)$ with the Dirichlet boundary condition. Assume that φ is a Musielak-Orlicz function. We introduce the “geometrical” Musielak-Orlicz-Hardy space $H_{\varphi, L_{\mathbb{R}^n}, r}(\Omega)$ via $H_{\varphi, L_{\mathbb{R}^n}}(\mathbb{R}^n)$, the Hardy space associated with $L_{\mathbb{R}^n} := -\Delta + V$ on \mathbb{R}^n , and establish its several equivalent characterizations, respectively, in terms of the non-tangential or the vertical maximal functions and the Lusin area functions associated with L_Ω . Moreover, some applications of such spaces to the inhomogeneous Dirichlet problems on semi-convex domains are also given. This talk is based on the joint work with Profs. Der-Chen Chang, Zunwei Fu and Dachun Yang.