ON ONE EXTENSION THEOREM DEALING WITH WEIGHTED ORLICZ–SLOBODETSKII SPACE. ANALYSIS ON LIPSCHITZ SUBGRAPH AND LIPSCHITZ DOMAIN

RAJ NARAYAN DHARA AND AGNIESZKA KAŁAMAJSKA

Abstract. Having a given weight $\rho(x) = \tau(\text{dist}(x, \partial \Omega))$ defined on Lipschitz boundary domain $\Omega$ and an Orlicz function $\Psi$, we construct the subordinated weight $\omega(\cdot, \cdot)$ defined on $\partial \Omega \times \partial \Omega$ and extension operator $\text{Ext}^L : \text{Lip}(\partial \Omega) \rightarrow \text{Lip}(\overline{\Omega})$ form Lipschitz functions defined on $\partial \Omega$ to Lipschitz functions defined on $\overline{\Omega}$, independent of $\tau$ and $\Psi$, in such a way that $\text{Ext}^L$ extends to the bounded operator from the subspace of weighted Orlicz-Slobodetskii space $Y^{\Psi, \omega}_{\partial \Omega}(\partial \Omega)$ generated by Lipschitz functions and subordinated to the weight $\omega$ to Orlicz-Sobolev space $W^{1, \Psi}_\rho(\Omega)$. More detailed analysis on Lipschitz subgraph is also provided. Result is new in the unweighted Orlicz setting for general function $\Psi$ as well as in the weighted $L^p$ setting.


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REFERENCES


