ON ONE EXTENSION THEOREM DEALING WITH WEIGHTED ORLICZ–SLOBODETSKII SPACE. ANALYSIS ON CUBE

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Abstract. Having given weight \( \tilde{\varrho} = \varrho (\text{dist}(x, \partial Q)) \) defined on cube \( Q \) and Orlicz function \( R \), we construct the weight \( \omega_{\varrho}(\cdot, \cdot) \) defined on \( \partial Q \times \partial Q \) and extension operator \( \text{Ext}^{L^\varrho} : \text{Lip}_d(\partial Q) \rightarrow \text{Lip}(Q) \) from Lipschitz functions defined on \( \partial Q \) with certain restricted support to Lipschitz functions defined on \( Q \), independent of \( \varrho \) and \( R \), such that \( \text{Ext}^{L^\varrho} \) extends to the bounded operator from certain subspace of weighted Orlicz-Slobodetskii space \( Y^{R,R}_{\omega_{\varrho}}(\partial Q) \) subordinated to the weight \( \omega_{\varrho} \) to Orlicz Sobolev space \( W^{1,R}_\varrho(Q) \). Result is new in the unweighted Orlicz setting for general function \( R \) as well as in the weighted \( L^p \) setting.


Keywords and phrases: Weighted Orlicz spaces, weighted Orlicz-Slobodetskii spaces, weighted Orlicz-Sobolev spaces, extension theorem, trace embedding theorem.

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