

L^p Hardy inequality on $C^{1,\gamma}$ domains

PIER DOMENICO LAMBERTI AND YEHUDA PINCHOVER

Abstract. We consider the L^p Hardy inequality involving the distance to the boundary of a domain in the n -dimensional Euclidean space with nonempty compact boundary. We extend the validity of known existence and non-existence results, as well as the appropriate tight decay estimates for the corresponding minimizers, from the case of domains of class C^2 to the case of domains of class $C^{1,\gamma}$ with $\gamma \in (0, 1]$. We consider both bounded and exterior domains. The upper and lower estimates for the minimizers in the case of exterior domains and the corresponding related non-existence result seem to be new even for C^2 -domains.

Mathematics Subject Classification (2010): 49R05 (primary); 35B09, 35J92 (secondary).