LOWER BOUNDS ON THE NORMS OF EXTENSION OPERATORS FOR LIPSCHITZ DOMAINS

VLADIMIR LOTOREICHIK

Abstract. Let $\Omega \subset \mathbb{R}^d$ be a bounded or an unbounded Lipschitz domain. In this note we address the problem of continuation of functions from the Sobolev space $H^1(\Omega)$ up to functions in the Sobolev space $H^1(\mathbb{R}^d)$ via a linear operator. The minimal possible norm of such an operator is estimated from below in terms of spectral properties of self-adjoint Robin Laplacians on domains $\Omega$ and $\mathbb{R}^d \setminus \overline{\Omega}$. Another estimate of this norm is also given, where spectral properties of Schrödinger operators with the $\delta$-interaction supported on the hypersurface $\partial \Omega$ are involved. General results are illustrated with examples.


Keywords and phrases: Extension operator, Lipschitz domain, Robin Laplacian, Schrödinger operator with $\delta$-potential, norm estimates.

REFERENCES