

Approximation to the Hardy Operator on Topological Measure Spaces

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Abstract : We consider a Hardy-type operator generated by a family of open subsets of a Hausdorff topological space. The family is indexed with non-negative real numbers and is totally ordered. For this operator, we obtain two-sided bounds of its norm, a compactness criterion, and bounds for its approximation numbers. Previously, bounds for its approximation numbers have been established only in the one-dimensional case, while we do not impose any restrictions on the dimension of the Hausdorff space. The bounds for the norm and conditions for compactness earlier have been found using different methods by G. Sinnamon and K. Mynbaev. Our approach is different in that we use domain partitions for all problems under consideration.

Keywords : approximation numbers, boundedness and compactness, multidimensional Hardy operator, Hausdorff topological space

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