MULTIDIMENSIONAL EXTENSIONS OF PÓLYA–KNOPP–TYPE INEQUALITIES OVER SPHERICAL CONES

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Abstract. In this paper, we introduce a new type of limit process to evaluate the modular-type operator norm of an integral operator. This leads us to get multidimensional extensions of Pólya-Knopp-type inequalities with general measures. Our results not only extend Levin-Cochran-Lee-type inequalities from $n = 1$ to general $n$, but also improve the estimates given there. Moreover, they generalize Carleson’s result, which is involved in the proof of Carleman’s inequality. Besides these, the Pólya-Knopp-type inequalities for the cases of Laplace transform and generalized Riemann-Liouville operators are derived. For the lower bounds, a parallel theory to the above is also established.


Keywords and phrases: Operator norm, integral operator, multidimensional modular inequalities, Hardy-Knopp-type inequalities, Pólya-Knopp-type inequalities.

REFERENCES