Ann. Sc. Norm. Super. Pisa Cl. Sci. (5)
Vol. XXIV (2023), 793-819

Interpolation estimates of the measure of noncompactness for multilinear mappings

MIECZYSŁAW MASTYŁO AND EDUARDO B. SILVA

Abstract. We study interpolation of the measure of noncompactness for multilinear mappings. It is proved that, for a large class of interpolation functors preserving interpolation of measure of noncompactness of interpolated linear operators between Banach couples, the results can be lifted to multilinear mappings. An application is given, where it is shown that the measure of noncompactness of multilinear mappings behaves well under the real method of interpolation. We also prove one-sided interpolation estimates of the measure of noncompactness of multilinear mappings. These results are used to prove a general multilinear variant of the linear result, obtained by Edmunds and Teixeira for the real method, under the hypothesis that the couple in the target of the operator satisfies an approximation property. A by-product is obtained, where we get logarithmically convex estimates of the measure of noncompactness of multilinear mappings between complex interpolation spaces, up to a multiplicative constant.

Mathematics Subject Classification (2020): 46B70 (primary); 46G25, 47H08, 46B50 (secondary).