

FACTORIZATION OF HOMOGENEOUS MAPS BETWEEN BANACH FUNCTION SPACES AND APPLICATIONS

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In this talk we present a new procedure for approximating linear operators between Banach function spaces. Our idea is to construct a framework for writing linear and continuous maps as norm limits of bounded homogeneous maps which are characterized by means of a factorization diagram —equivalently, by a norm domination inequality—. Using this, we show as an example a suitable approximation procedure for compact operators from Banach function spaces into Banach spaces as norm limits of homogeneous maps that satisfy a fixed factorization property. In fact we prove that under the assumption of compactness of the linear map, it can be approximated with a sequence of order bounded and norm uniformly bounded homogeneous maps (no approximation property for the spaces involved are needed). This setting is used for describing properties of the optimal domain —i.e. to the biggest Banach function space to which they can be extended— of compact operators. Our ideas have their roots in the classical Grothendieck’s result on the description of weakly compact sets in Banach spaces, but particular Banach lattice tools — p -convexification, Maurey-Rosenthal type theorems— are also used.

This is a joint research with Pilar Rueda (U. Valencia, Spain).

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