REVISITING THE MARCINKIEWICZ THEOREM FOR NON-COMMUTATIVE MAXIMAL FUNCTIONS

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Abstract: We give an alternative proof of a Marcinkiewicz interpolation theorem for non-commutative maximal functions and positive maps and refine earlier versions of the statement. The main novelty is that it provides a substitute for the maximal function of a martingale in L_p, $1 < p \leqslant \infty$, losing very little on numerical constants. For non-positive maps, the above mentioned theorem fails but we can still obtain some interpolation results by weakening the maximal norm that we consider.