

Banach-valued modulation-invariant Carleson embeddings and outer- L^p spaces: the Walsh case

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We prove modulation-invariant embedding bounds for Banach-valued functions on the 3-Walsh group into iterated outer- L^p spaces on the 3-Walsh time-frequency space. Our Banach spaces are UMD and sufficiently close to Hilbert spaces in an interpolative sense, with the RMF property after identification with a set of operators. These embedding bounds imply L^p -bounds and sparse domination for the Banach-valued tritile operator, a discrete model of the Banach-valued bilinear Hilbert transform.