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Providence, RI 02912. *Banach-valued multilinear singular integrals.*

In this poster, we introduce a general framework for the analysis of multilinear singular integrals acting on Banach-valued functions. Our main result is a Coifman-Meyer type theorem for operator-valued multilinear multipliers acting on suitable tuples of UMD spaces, which are the Banach spaces  $X$  with the property that singular integrals, in particular the Hilbert transform, admit a  $L^p(X)$  bounded extension. A concrete case of our theorem is a multilinear generalization of Weis' operator-valued Hörmander-Mihlin linear multiplier theorem. Furthermore, we derive from our main result a wide range of mixed  $L^p$ -norm estimates for multi-parameter multilinear multiplier operators, as well as for the tensor products of a one-parameter Coifman-Meyer multiplier with a bilinear Hilbert transform. We also prove several operator-valued  $T(1)$  theorems both in one parameter, and of multi-parameter, mixed-norm type. A distinguishing feature of our  $T(1)$  theorems is that the usual explicit assumptions on the kernel of  $T$  are replaced with testing-type conditions. Our proofs rely on a newly developed Banach-valued version of the outer  $L^p$  space theory developed by Do and Thiele. (Received July 30, 2015)