HÜLYA DURU, Istanbul University

Multiplication operators on vector-valued function spaces

Let E be a Banach function space on a probability measure space (Ω, Σ, μ). Let X be a Banach space and $E(X)$ be the associated Köthe-Bochner space. An operator on $E(X)$ is called a multiplication operator if it is given by multiplication by a function in $L^\infty(\mu)$. In the main result of this talk, we show that an operator T on $E(X)$ is a multiplication operator if and only if T commutes with $L^\infty(\mu)$ and leaves invariant the cyclic subspaces generated by the constant vector-valued functions in $E(X)$. As a corollary we show that this is equivalent to T satisfying a functional equation considered by Calabuig, Rodriguez, Sanchez-Perez in [Multiplication operators in Köthe - Bochner spaces. Journal of Mathematical Analysis and Applications,373(1)(2011),316-321].

(joint work with Arkady Kitover and Mehmet Orhon)