Banach spaces and harmonic analysis associated with Laguerre and Bessel operators

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Abstract

Vector valued harmonic analysis is closely related to the geometry of Banach spaces. The fact that a certain property, for instance, the boundedness of certain classical operators, is to be true when functions valued in a Banach space are considered, is related to geometrical or topological properties of underlying Banach spaces. Thus, new characterizations of old properties are obtained or new type of Banach spaces appear. Results of Burkholder and Bourgain were crucial in this area. Our objective in this talk is to present new characterizations for well-known properties of Banach spaces (namely, UMD property, martingale type and cotype, Hardy-Litllewood property,...) in terms of the boundedness of certain harmonic analysis operators (Riesz transforms, maximal operators, Littlewood-Paley g-functions,...) associated with Laguerre and Bessel operators.