

The Schur and Radon-Nikodým properties for Lipschitz-free spaces

Ramón J. Aliaga

Universidad Politécnica de Valencia

The problem of determining which Lipschitz-free spaces $\mathcal{F}(M)$ over complete metric spaces M have the Radon-Nikodým and Schur properties has been around since Kalton's seminal paper from 2004. In a joint work with Chris Gartland, Colin Petitjean and Tony Procházka, we recently solved the problem and proved that both properties are actually equivalent for the class of Lipschitz-free spaces. They hold precisely when M is purely 1-unrectifiable, that is, when it contains no bi-Lipschitz copy of a subset of the real line with positive measure. The keys to this result lie in the analysis of locally flat Lipschitz functions, and in the reduction of the problem to the case of compact metric spaces M , where these properties turn out to also be equivalent to $\mathcal{F}(M)$ being a dual Banach space.