Analysis Seminar

Title: Lipschitz-free spaces and the metric approximation property

Speaker: R. Smith

Date: Tue 30th September 2014 at 4:00PM

Location:

Abstract: Given a metric space M with distinguished point 0, the Lipschitz-free space $mathcalF(M)$ is the natural predual of the space of Lipschitz functions that vanish at 0 (endowed with the Lipschitz norm). The study of these spaces is an emerging area of research. Despite their elementary definition, the linear structure of the spaces $mathcalF(M)$ is still relatively poorly understood: in many cases it is not known whether $mathcalF(M)$ has the approximation property, a finite-dimensional decomposition or a Schauder basis. In this talk we show that for certain subsets M of $mathbbR^N$ (such as all finite-dimensional compact convex sets), the Lipschitz-free space $mathcalF(M)$ has the metric approximation property, independent of the choice of norm on $mathbbR^N$. This contrasts with the fact, proved by Godefroy and Ozawa, that there exist infinite-dimensional compact convex sets M such that $mathcalF(M)$ does not have the approximation property.