



Analysis Seminar

Title: Approximation of norms in Banach spaces

Speaker: R. Smith

Date: Tue 6th February 2018 at 4:00PM

Location: SCN 125

Abstract: This talk follows on from one I gave in May 2017. Let X be a Banach space and let \mathbf{P} be a property of norms. We say that a norm $\|\cdot\|$ on X (equivalent to the original norm) can be approximated by norms having \mathbf{P} if, given $\varepsilon > 0$, there exists another norm $|||\cdot|||$ on X with \mathbf{P} , such that $\|x\| \leq |||x||| \leq (1 + \varepsilon)\|x\|$ for all $x \in X$. There are a number of papers in the literature that consider the question of whether or not all (equivalent) norms on a given space can be approximated in this way. For a number of classes of Banach spaces X , including $c_0(\Gamma)$ (where Γ is an arbitrary set), certain Orlicz spaces and Lorentz predual spaces, and a class of $C(K)$ spaces (where K comes from a class of compact spaces having unbounded scattered height), we show that all equivalent norms on X can be approximated by C^∞ -smooth norms or polyhedral norms. This is joint work with Stanimir Troyanski, University of Murcia, Spain, and Institute of Mathematics, Bulgarian Academy of Sciences.