COLLOQUIA

Tuesday, June 17, 2014.

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Bases formed by translates of one element in $L_p(\mathbb{R})$

Abstract:

For $\lambda \in \mathbb{R}$ and $f : \mathbb{R} \to \mathbb{R}$ we denote by $f_{(\lambda)}$ the *translate of* f *by* λ; i.e. the function $x \mapsto f(x - \lambda)$. Let $1 \leq p < \infty$, $f \in L_p(\mathbb{R})$ and $\Lambda \subseteq \mathbb{R}$ be countable. Assuming the family $(f_\lambda : \lambda \in \Lambda)$ has certain *basic properties* (i.e. is a Markushevich basis, Schauder basis, unconditional basis, frame etc.) we are asking about the structure of the closed subspace of $L_p(\mathbb{R})$, $X_p(f, \Lambda)$, generated by the set of translates $f_{(\lambda)}$ of f. We focus on the question whether or not it is possible that $X_p(f, \Lambda) = L_p(\mathbb{R})$.

Our main result is that if $(f_{(\lambda)} : \lambda \subset \Lambda)$ is unconditional and $X_p(f, \Lambda)$ is complemented in $L_p(\mathbb{R})$ then $(f_{(\lambda)})$ is equivalent to the unit vector basis of ℓ_p, and in particular $X_p(f, \Lambda) \subsetneq L_p(\mathbb{R})$.

This is joint work with Odell, Sari and Zheng (Systems formed by translates of one element in Lp(R). Trans. Amer. Math. Soc. 363 (2011), no. 12, 6505 – 6529.) and Freeman, Odell and Zsak (to appear in Israel Journal of Mathematics, arXiv:1209.4619).

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Default Data

Time 11:00 to 12:00
Location Room 2.2.D08
Building Sabatini (2nd Floor)

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