HARMONIC ANALYSIS MORNING
30 January, 2015

Some harmonic analysis in mixed Lebesgue spaces

(11:00) RODOLFO TORRES (University of Kansas)

ABSTRACT: Mixed Lebesgue spaces have attracted interests in harmonic analysis since the early 60's. These spaces naturally appear when considering functions with different quantitive behavior on different sets of variables on which they depend. For example, this is the case when considering functions with physical relevance and that depend on both time and spaces variables. Mixed Lebesgue spaces can also be seen as vector-valued Lebesgue spaces. Using such point of view we will revisit some results in the literature and present some new ones about Leibniz's rule for fractional derivatives, sampling, Calderón's reproducing formula, and wavelets in the context of mixed norms.

Dyadic structure theorems for the function spaces BMO, H^1 and friends

(12:30) LESLEY WARD (University of South Australia)

ABSTRACT: This talk is about bridging the gap between the continuous and dyadic versions of the main function spaces in harmonic analysis. T. Mei showed that the space BMO of functions of bounded mean oscillation is given by the intersection of two suitable translates of the dyadic version BMO_d. We generalise his result to the case of multiparameter (product) BMO. We also prove the analogous results on intersections of translates for the space VMO of functions of vanishing mean oscillation, for Muckenhoupt's A_p weights, for reverse Hölder weights, and for doubling measures, and we establish related results for the Hardy space H^1 and for maximal functions. Our results hold in both the one-parameter and product settings, and we have also extended them from the Euclidean setting to the case where the underlying spaces are product spaces of homogeneous type. This is joint work with Anna Kairema, Ji Li, Jill Pipher and Cristina Pereyra.