Conde-Alonso, José Manuel (Universitat Autònoma de Barcelona, Spain):
A dyadic RBMO *space and pointwise domination of nonhomogeneous Calderón-Zygmund operators.*

Abstract: We revisit basic nonhomogeneous Calderón-Zygmund theory from the point of view of martingales. Given a measure μ of polynomial growth on $\mathbb{R}^d$, we refine a deep result by David and Mattila to construct an atomic martingale filtration of $\mathrm{supp}(\mu)$ which provides the right framework for a dyadic form of nondoubling harmonic analysis. Our dyadic formulation is effective to address some basic questions:

  i) A dyadic form of the 'right' BMO space for non doubling measures, RBMO.

 ii) Lerner's domination of Calderón-Zygmund operators by dyadic operators.

iii) A dyadic Calderón-Zygmund decomposition suitable for the study of both Calderón-Zygmund operators and Haar shifts.

If there is enough time, we will explain how the formulation of our results in terms of martingales leads to a natural generalization to matrix valued functions.
   Based on joint work with Javier Parcet.