Department of Mathematical Sciences
Colloquium

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DYADIC HARMONIC ANALYSIS - CASE STUDY: THE HILBERT TRANSFORM

In this talk I will describe what is Dyadic Harmonic Analysis by discussing the case of the Hilbert transform, one of the most important objects of study in analysis. I will review the Hilbert transform and its history and emphasize that it is the first example of a singular integral operator, a Fourier multiplier, and more recently of an average of "dyadic shift operators". For the later I will introduce the dyadic intervals and its associated Haar basis, as well as auxiliary dyadic operators (e.g. dyadic paraproduct). Estimates for the Hilbert transform reduce then to uniform estimates for the "dyadic shift operators". I will then present recent results in the theory of weighted inequalities that have been solved by careful analysis of this dyadic operators, and discuss others that are being actively investigated today.

Friday, November 13, 2009 at 3 pm in Bell Hall 143
The University of Texas at El Paso

Refreshments will be served in front of the colloquium room,
15 minutes before the start of the colloquium.