ANALYSIS SEMINAR

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Irregularity of Distributions and Multiparameter Weights

by

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ABSTRACT

Given a finite collection of points in the unit cube in R^d, one can define, for each point x in that unit cube, a value (the "discrepancy function" for that distribution) based on the difference between the actual and the expected (based on a continuous distribution) number of points found in the parallelepiped with diagonal from the origin to x. In 1954 the Fields medalist K. F. Roth proved the first major result in discrepancy theory, showing that "no point [distribution] can, in a certain sense, be too evenly distributed", by giving a lower bound on the L^2 norm of the discrepancy function; this result was later extended to L^p by W. Schmidt and, more recently, to the endpoint case $L(\log L)^{(d-2)/2}$ by M. Lacey using multiparameter Littlewood-Paley theory. We will show how one can use the weighted Littlewood-Paley theory to generalize the theorem of Roth-Schmidt to the case of multiparameter Muckenhoupt A_∞ weights.

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Friday, September 30, 2011, at 1:30-2:30 pm

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