An old problem revisited: maximal functions along convex curves in the plane

JIM WRIGHT

University of Edinburgh (Scotland)

ABSTRACT:

A central problem in euclidean harmonic analysis since the late 1960's has been the study of singular and maximal Radon transforms. Ten years ago a landmark paper by Christ, Nagel, Stein and Wainger was published establishing L^p bounds for these operators when a curvature condition is satisfied. In the late 1970's the model class of operators along convex curves in the plane was proposed to explore to what extent this curvature condition is necessary. The L^2 theory for the corresponding singular integrals has been completely settled (and to a lesser extent, the L^p theory) by the late 1980's/early 1990's. The theory for the corresponding maximal functions is much less satisfactory. In this lecture we give a recent progress report for the maximal function which goes beyond the singular integral theory.