1019-42-191 **Izabella Laba*** (`ilaba@math.ubc.ca`), Department of Mathematics, University of British Columbia, Vancouver, B.C. V6T 1Z2, Canada. *Harmonic analysis and incidence geometry: a survey.*

Many problems in Euclidean harmonic analysis, especially restriction theory, lead to purely geometric questions, typically involving arrangements of large families of "thin" objects such as lines, circles, or surfaces. Conversely, geometric measure-theoretic questions involving projections or intersections of sets are often approached via harmonic analytic methods.

While the geometry behind restriction-type problems has been studied since Fefferman's work in the early 1970s, and applications of Fourier analysis to geometric measure theory go back at least to the work of Kaufmann in the late 1960s, it was only in the 1990s that harmonic analysts began to explore the connections to the area of combinatorics known as discrete geometry, or more specifically incidence geometry. The latter studies many of the same questions that harmonic analysts are interested in - for example, projection sets, distance sets, or arrangements of families of thin objects - but in a discrete setting, as opposed to the geometric measure-theoretic setting encountered in harmonic analysis.

The purpose of this talk is to give a brief survey of this area of research, including both classical results and current directions, with emphasis on the connections between the analysis and the combinatorics. (Received August 15, 2006)