1009-52-164 **Javier Bracho*** (`jbracho@math.unam.mx`), Instituto de Matematicas, UNAM, Cd. Universitaria, 04510 Mexico, D.F., Mexico. *Transversal m-flats to n-dimensional convex sets and projective flats.*

The talk will begin with an outline of [1], where it is proved that a numbered family of intervals (in Euclidean space of any dimension) has a transversal line if each six of them have a transversal line hitting them in the given order. This theorem has a projective sibling; namely, a family of lines in projective space (of any dimension) has a transversal line if each six of them do. In both cases, the "magic" number 6 is best possible.

Then, their generalizations to the existence of transversal m-flats, with a general position hypothesis, will be presented. For a family of convex sets of dimension n, a corresponding abstract order type is needed, and if each $2n+m+3$ of the convex sets have a compatible transversal m-flat, then the whole family has one. For the case of projective n-flats, they have a transversal m-flat provided each $\left\lfloor \frac{1}{2}(3n+2m+7) \right\rfloor$ do. For the proof of these two theorems, some abstract "Helly Theory" is developed and applied to obtain the Helly numbers of what we call linear and convex partitions.

[1] Jorge Arocha, Javier Bracho and Luis Montejano. Transversal lines to lines and intervals. Discrete Geometry, edited by András Bezdeck, Pure and Applied Math. 253, Marcel Decker, N.Y. (2003). (Received August 15, 2005)