ROBERT DAWSON, St Mary's University
Monotone Spreads and Chebyshev Sets in Hyperspaces

A $Chebyshev\ set$ in a metric space is one with the "nearest neighbor" property: every point in the space has a unique nearest neighbor in the set. In $\mathbf{R}^n$ with the usual norm this is more or less the same thing as convexity; with the "taxicab metric" neither implies the other. Here we study Chebyshev sets in metric hyperspaces.

A *monotone arc* in a metric hyperspace of convex bodies is one in which the support functions change in a "translation-like" way along the arc. In certain hyperspaces, closed monotone arcs have the Chebyshev property.

A *monotone spread* is a set of bodies such that every pair of bodies in the spread is joined within the spread by a monotone arc belonging to the set - it's a "convexity-like" property. In the hyperspaces considered in the previous paragraph, monotone spreads also have the Chebyshev property.

This talk will mix this in with a famous theorem of J. Frank Adams, some convex algebraic geometry, and some algebraic topology, and come up with some surprising and hopefully interesting results.