Our starting point is
The Hirsch conjecture:

The graph of a $d$-polytope with $n$ facets has diameter at most $n - d$.

A weaker conjecture which is also open is:
Polynomial Diameter Conjecture:

Let $G$ be the graph of a $d$-polytope with $n$ facets. Then the diameter of $G$ is bounded above by a polynomial of $d$ and $n$.

In the lecture I will discuss several results and problems around the Hirsch conjecture, and related questions in the areas of linear programming, convex polytopes, and combinatorics.

Will an open many-participants discussion/collaboration (known as "polymath") be helpful in approaching this problem? (Or for math problems in general?)

For a list of related problems and a recent internet discussion see: http://gilkalai.wordpress.com/2009/08/09/the-polynomial-hirsch-conjecture-discussion-thread/

For more information please visit the seminar website at:
http://www.math.nyu.edu/seminars/geometry_seminar.html.