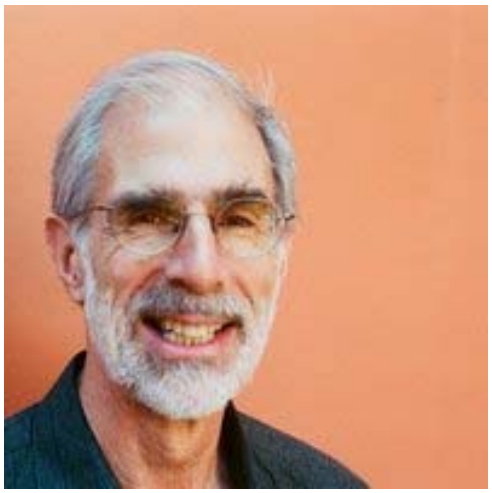
Colloquium

University of Notre Dame
Department of Mathematics

Speaker: David Eisenbud

University of California at Berkeley



Will give a lecture entitled

Linear equations over polynomial rings

Date: Friday, February 3, 2017
Time: 4:00 PM
Location: 129 Hayes-Healy Hall
Departmental Tea: Tea in Room 257 (lounge in Hurley Hall) at 3:30 p.m.

Abstract:

As we teach our students, all solutions to n linear equations in m unknowns over a field can be expressed in terms of at most m of them — m minus the rank of the system, to be precise. Already in the 19th century Arthur Cayley and others knew that this bound does not hold for solutions in vectors of polynomials to systems of linear equations with polynomial coefficients. David Hilbert's first major works, in the 1880's, involved a deeper understanding of what might be considered a "complete" solution of such systems, encapsulated in the notion of free resolutions. I will explain what these are and some of the modern contexts in which they appear, and sketch the simple ideas behind a spectacular recent (November 2016) proof by Mark Walker of a basic conjecture, open for over 40 years, about the number of solutions.

David Eisenbud - University of California at Berkeley