1124-05-384 **Susan Margulies***, 121 Blake Road, 323 Chauvenet Hall, Annapolis, MD 21402, and **Chris Griffin**. *Combinatorial Optimization Problems via Hilbert's Nullstellensatz.*

Systems of polynomial equations often provide elegant and compact models of NP-complete problems. In this talk, we explore the results in this area, ranging from combinatorial interpretations of Hilbert's Nullstellensatz certificates of infeasibility, to identifying polynomial-solvable instances of NP-complete problems, to exploring combinatorial patterns within the Grobner basis of the underlying ideal. We will explore algebraic results on problems such as graph-k-colorability, partition, independent set and perfect matching. (Received September 13, 2016)