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**Luke Oeding\*** ([oeding@math.tamu.edu](mailto:oeding@math.tamu.edu)), Department of Mathematics, Texas A&M University, Mail Stop 3368, College Station, TX 77840. *The Geometry of the Relations Among Principal Minors of Symmetric Matrices*. Preliminary report.

A principal minor of a matrix is the determinant of a submatrix which has the same row and column set. Given an  $n \times n$  symmetric matrix, one can calculate all of its principal minors and store this information in a vector of length  $2^n$ . Certain applications require a complete algebraic description of all the relations among principle minors. Holtz and Sturmfels have asked the following geometric question. What are the minimal generators of the homogeneous ideal of the variety of principal minors of symmetric matrices?

There is a lot of underlying structure in this problem which leads to some beautiful geometry and representation theory. I use this extra structure to find new results. In this talk I will describe these results and some of the tools used to discover them. (Received January 16, 2008)