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Seth Sullivant* (smsulli2@ncsu.edu), Department of Mathematics, North Carolina State University, Box 8205, Raleigh, NC 27695. *Algebraic aspects of Gaussian graphical models.*

A graphical model is a statistical model where random variables are represented by vertices in a graph and interactions between the random variables are encoded by different types of edges in the graph. Graphical models are an important family of statistical models because they are easy to build, interpret, and manipulate.

After first providing an introduction to this family of statistical models, I will focus on the case of graphical models for Gaussian random variables. These models are semialgebraic subsets of the cone of symmetric positive definite covariance matrices, that are parametrized by a combinatorial rule called the trek rule. I will describe some recent results characterizing the vanishing ideals of these families of covariance matrices. In particular, I will describe results for Gaussian graphical models with hidden random variables. (Received August 05, 2008)