1033-05-49 **Seth Sullivant*** (seths@math.harvard.edu), Department of Mathematics, Science Center, One Oxford Street, Cambridge, MA 02138. *The combinatorics of treks.*

A trek is a simple path between two vertices in a directed acyclic graph which has no head to head meetings of arrows. Treks are used in a parametrization of a family covariance matrices that are associated to a Bayesian network for Gaussian random variables called the trek rule. In this paper, we focus on the combinatorial aspects of treks. In particular, we study when the determinants of trek polynomials can be equal to zero, with the goal of generalizing the tetrad representation theorem from statistics from 2×2 minors to higher order minors. (Received August 24, 2007)