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Helene Massam* (massamh@mathstat.yorku.ca), 4700 Keele St., Toronto, ON M3J 1P3, Canada. *Wishart distributions for decomposable graphs.*

When considering a graphical Gaussian model N_G Markov with respect to a decomposable graph G , the parameter space of interest for the precision parameter is the cone P_G of positive definite matrices with fixed zeros corresponding to the missing edges of G . The parameter space for N_G is the cone Q_G , dual to P_G , of incomplete matrices with submatrices corresponding to the cliques of G being positive definite. In this talk we construct on the cones Q_G and P_G two families of Wishart distributions, namely the type I and II Wisharts. They can be viewed as generalization of the hyper Wishart and the inverse of the hyper inverse Wishart as defined by Dawid and Lauritzen(1993). We will show that the type I and II Wisharts have properties similar to those of the hyper and hyper inverse Wishart. Indeed, the inverse of the type II Wishart forms a conjugate family of priors for the covariance parameter of the graphical Gaussian model and is strong directed hyper Markov for every direction given to the graph by a perfect order of its cliques while the type I Wishart is weak hyper Markov. Moreover, the inverse type II Wishart as a conjugate family presents the advantage of having a multi-dimensional shape parameter, thus offering flexibility for the choice of a prior. (Received September 02, 2008)