1057-62-115 **Helene M Massam*** (massamh@yorku.ca), Math and Stats Department, York University, 4700 Keele Street, Toronto, Ontario M3J1P3, Canada, and **Gerard G Letac** (gerard.letac@alsatis.net), Laboratoire de Statistiques et Probabilites, 118 Route de Narbonne, Toulouse, 31062. *The geometry of hierarchical discrete loglinear models.* Preliminary report.

Given a contingency table of counts, a standard problem is that of model selection in the class of hierarchical loglinear models. In Bayesian analysis, this is done through the Bayes factor which is the ratio of the posterior probabilities of two models given the data. When the prior distribution on the class of models is chosen to be uniform, this problem is reduced to computing the ratio of normalizing constants for the prior and posterior distributions. As a prior on the loglinear parameters, we use the prior defined by Massam, Liu and Dobra (2009) which comprises two hyperparameters. One of these hyperparameters is the equivalent sample size α which represents the total number of counts of a fictive contingency table. Taking this equivalent sample size as small as possible has the effect of "regularizing" the selected models. Letting α go to 0, we are lead to study the geometry of the convex hull of the support of the multinomial model. The faces of this convex hull are of particular importance. We show that as α tends to 0, the Bayes factor is equivalent to a power of α which depends on the position of the data point with respect to the faces of the convex hulls of the support of each one of the two multinomials hierarchical models. (Received January 15, 2010)