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DISCRETE MULTIVARIATE MIXTURE DISTRIBUTIONS FOR SPATIAL MODELS

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In this talk we propose models for multivariate count data which are spatially correlated and present over-dispersion. In other words, the model must capture the covariance structure within and among locations. There are different ways, in the literature, of defining a multivariate Poisson distribution. We discuss these different approaches and consider two situations: a multivariate Poisson hierarchical model with spatial random effects, and a multivariate negative binomial distribution, which can also be defined in different ways, based on the multivariate Poisson. Inference is performed under the Bayesian paradigm. As the posterior distribution does not have a closed form, MCMC techniques are used to obtain a sample from the posterior. We discuss the properties of our proposed models on artificial data sets and also on a real application.