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Title: An informative prior for correlation matrices

Abstract:
Priors for matrix-variate parameters are complicated to choose, challenging to interpret, and are usually assigned based on computational feasibility rather than accurately reflecting structural prior beliefs. Element-wise priors are challenging because they can obscure the joint interpretation of the matrix parameter in the model. Even though a matrix contains multiple values, from a modelling perspective, we can think of it as functionally one parameter. Hence, we propose an informative prior for a correlation matrix defined on a functional neighbourhood around a user-provided matrix. This prior is proper and offers a joint interpretation of the matrix parameter on the model, either as the correlation between a subset of model components or in multivariate regression.