

A Bayesian Model for Longitudinal Circular Data

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SUMMARY

The analysis of short longitudinal series of circular data may be problematic and to some extent has not been completely developed. In this paper we present a Bayesian analysis of a model for such data. The model is based on a radial projection onto the circle of a particular bivariate normal distribution. Inferences about the parameters of the model are based on samples from the corresponding joint posterior density which are obtained using a Metropolis-within-Gibbs scheme after the introduction of suitable latent variables. The procedure is illustrated both using a simulated data set and a real-data set previously analyzed in the literature.

Keywords: circular data, longitudinal data, Gibbs sampler, latent variables, mixed-effects linear models, projected normal distribution.

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