

## DIRICHLET PROCESSES IN NONLINEAR MIXED EFFECTS MODELS

Two efficient approaches are considered to deal with the difficulty in computing the intractable integrals when implementing Gibbs sampling in the nonlinear mixed effects model (NLMM) based on Dirichlet processes (DP). The first approach computes the Laplace's approximation to the integral for its high accuracy, low cost, and ease of implementation. The second approach uses the no-gaps algorithm of MacEachern and Muller (1998) to perform Gibbs sampling without evaluating the difficult integral. The two approaches are applied to real problems and simulations. Results show that both approaches perform well in density estimation and prediction and are superior to the parametric analysis in that they can detect important model features, such as skewness, long tails, and multimodality, whereas the parametric analysis cannot.