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A Bivariate Semiparametric Stochastic Mixed Model

The analysis of bivariate cyclic longitudinal data remains an open problem. In this talk, we propose a bivariate semiparametric stochastic mixed model for such analysis, where each univariate model is described by its own fixed effects, a periodic smooth nonparametric function for the underlying time effect, a random effect accounting for between-subject variance, and a Gaussian process driving the within-subject variance. We will briefly describe the likelihood estimation/prediction procedure of all model parameters/effects. The proposed method is applied to a simulation study and, as time permits, an analysis from a study of longitudinal levels of female hormone data.