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Bayesian Semiparametric Inference of Frailty Model Using Lévy Process Priors

Lee and Kim (2003) first proposed the use of a Levy process prior for Bayesian inference of the cumulative hazard function in a proportional hazard model. We extend this model by incorporating a frailty component for heterogeneity among the cumulative intensity processes for different subjects. The Lévy process prior generalizes that used by Sinha (1993) and Sinha et al.(1998), who do consider frailty models. It is assumed that random effects are Gamma with mean one and variance θ which makes our model semi-parametric. We characterize the joint posterior and use blocked Gibbs sampling for sampling from the joint posterior.