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Seminar

MULTIVARIATE MEASUREMENT ERROR MODELS BASED ON STUDENT- t DISTRIBUTION UNDER CENSORED RESPONSES

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Measurement error models constitute a wide class of models that include linear and nonlinear regression models. They are very useful to model many real-life phenomena, particularly in the medical and biological areas. The great advantage of these models is that, in some sense, they can be represented as mixed effects models, allowing us to implement well-known techniques, like the EM-algorithm for the parameter estimation. In this paper, we consider a class of multivariate measurement error models where the observed response and/or covariate are not fully observed, i.e., the observations are subject to certain threshold values below or above which the measurements are not quantifiable. Consequently, these observations are considered censored. We assume a Student-t distribution for the unobserved true values of the mismeasured covariate and the error term of the model, providing a robust alternative for parameter estimation. Our approach relies on a likelihood-based inference using an EM-type algorithm. The proposed method is illustrated through some simulation studies and the analysis of an AIDS clinical trial dataset.