Identification and estimation in semiparametric mixtures

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We consider finite mixtures where at least for some component distributions, no parametric form is assumed. Without additional structure in the model, identification and estimation are then based on shape-constraints like symmetry or log-concavity. For two-component mixtures where the weights depend on additional covariates, more general identification results can be obtained in case of certain tail conditions on the distribution functions or the characteristic functions of the mixture components. Such models include multivariate mixtures with independent components, Markov-dependent mixtures or regression models with a misspecified binary regressor. We propose estimators of the mixture components and, using strong approximations of the ordinary empirical and the empirical characteristic processes, we prove their asympotic normality.