

# The residual-based empirical process in nonparametric multiple regression

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We consider the estimation of the error distribution in a heteroscedastic nonparametric regression model with multivariate covariates. As estimator we consider the empirical distribution function of residuals, which are obtained from multivariate local polynomial fits of the regression and variance functions, respectively. Weak convergence of the empirical residual process to a Gaussian process is shown. We also discuss applications of the results to model tests and hint at possible extensions to a more general framework of processes based on pseudo-observations.