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Functional kernel estimators of large conditional quantiles

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We address the estimation of conditional quantiles when the covariate is functional and when the order of the quantiles converges to one as the sample size increases. In a first time, we investigate to what extent these large conditional quantiles can still be estimated through a functional kernel estimator of the conditional survival function. Sufficient conditions on the rate of convergence of their order to one are provided to obtain asymptotically Gaussian distributed estimators. In a second time, basing on these result, a functional Weissman estimator is derived, permitting to estimate large conditional quantiles of arbitrary large order. These results are illustrated on finite sample situations.

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