

A limited in bandwidth uniformity for the functional limit law of the increments of the empirical process

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Abstract

Consider the following local empirical process indexed by K in \mathcal{G} , for fixed $h > 0$ and z in \mathbb{R}^d : $G_n(K, h, z) = \sum_{i=1}^n K(\frac{Z_i - z}{h^{1/d}}) - \mathbb{E}(K(\frac{Z_i - z}{h^{1/d}}))$, where the Z_i are i.i.d. on \mathbb{R}^d . We provide an extension of a result of Mason (2004). Namely, under mild conditions on \mathcal{G} and on the law of Z_1 , we establish a uniform functional limit law for the collections of processes $\{G_n(\cdot, h_n, z); z \in H; h \in [h_n, \mathfrak{h}_n]\}$, where $H \subset \mathbb{R}^d$ is a compact set with nonempty interior and where h_n and \mathfrak{h}_n satisfy the Csörgő-Révész-Stute conditions.

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