



The Berry–Esseen bounds of the weighted estimator in a nonparametric regression model

Xuejun Wang¹ · Yi Wu¹ · Shuhe Hu¹

Received: 29 August 2017 / Revised: 24 April 2018 / Published online: 30 June 2018
© The Institute of Statistical Mathematics, Tokyo 2018

Abstract

Consider the following nonparametric model: $Y_{ni} = g(x_{ni}) + \varepsilon_{ni}$, $1 \leq i \leq n$, where $x_{ni} \in \mathbb{A}$ are the nonrandom design points and \mathbb{A} is a compact set of \mathbb{R}^m for some $m \geq 1$, $g(\cdot)$ is a real valued function defined on \mathbb{A} , and $\varepsilon_{n1}, \dots, \varepsilon_{nn}$ are ρ^- -mixing random errors with zero mean and finite variance. We obtain the Berry–Esseen bounds of the weighted estimator of $g(\cdot)$. The rate can achieve nearly $O(n^{-1/4})$ when the moment condition is appropriate. Moreover, we carry out some simulations to verify the validity of our results.

Keywords Berry–Esseen bound · ρ^- -mixing random errors · Nonparametric regression model · Weighted estimator

Supported by the National Natural Science Foundation of China (11671012, 11501004, 11501005), the Natural Science Foundation of Anhui Province (1508085J06) and the Key Projects for Academic Talent of Anhui Province (gxbjZD2016005)..

✉ Xuejun Wang
07019@ahu.edu.cn

¹ School of Mathematical Sciences, Anhui University, Hefei 230601, People's Republic of China