Acta Mathematicae Applicatae Sinica,English Series 2002 18 (4): 641-656 ISSN: 1439-8516 CN: 11-2039/O1

Original Articles

Spatial Nonparametric Regression Estimation: Non-isotropic Case

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收稿日期 修回日期 网络版发布日期 接受日期

摘要 Data collected on the surface of the earth often has spatial interaction. In this paper, a non-isotropic mixing spatial data process is introduced, and under such a spatial structure a nonparametric kernel method is suggested to estimate a spatial conditional regression. Under mild regularities, sufficient conditions are derived to ensure the weak consistency as well as the convergence rates for the kernel estimator. Of interest are the following: (1) All the conditions imposed on the mixing coefficient and the bandwidth are simple; (2) Differently from the time series setting, the bandwidth is found to be dependent on the dimension of the site in space as well; (3) For weak consistency, the mixing coefficient is allowed to be unsummable and the tendency of sample size to infinity may be in different manners along different direction in space; (4) However, to have an optimal convergence rate, faster decreasing rates of mixing coefficient and the tendency of sample size to infinity along each direction are required.

关键词 bandwidth kernel estimator mixing non-isotropic

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Key words bandwidth kernel estimator mixing non-isotropic

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