

**Yatracos, Yannis**

**Dependence and the dimensionality reduction principle.** (English) Zbl 1056.62054

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Summary: *C. Stone's* dimensionality reduction principle [Ann. Stat. 13, 689–705 (1985; Zbl 0605.62065); ibid. 10, 1040–1053 (1982; Zbl 0511.62048)] has been confirmed on several occasions for independent observations. When dependence is expressed with  $\varphi$ -mixing, a minimum distance estimate  $\hat{\theta}_n$  is proposed for a smooth projection pursuit regression-type function  $\theta \in \Theta$ , that is either additive or multiplicative, in the presence of or without interactions. Upper bounds on the  $L_1$ -risk and the  $L_1$ -error of  $\hat{\theta}_n$  are obtained, under restrictions on the order of decay of the mixing coefficient. The bounds show explicitly the additive effect of  $\varphi$ -mixing on the error, and confirm the dimensionality reduction principle.

**MSC:**

62G08 Nonparametric regression and quantile regression

62G20 Asymptotic properties of nonparametric inference

**Keywords:**

additive and multiplicative regression models; dimensionality reduction; projection pursuit; Kolmogorov's entropy; minimum distance estimation;  $\varphi$ -mixing; rates of convergence

**Full Text:** [DOI](#)

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