

Nolan, Deborah; Pollard, David

U-processes: Rates of convergence. (English) Zbl 0624.60048
Ann. Stat. 15, 780-799 (1987).

Let ξ_1, ξ_2, \dots be independent, identically distributed random variables and denote by

$$S_n(f) = \sum_{1 \leq i \neq j \leq n} f(\xi_i, \xi_j)$$

the U-statistic with respect to the kernel f . The authors obtain almost sure convergence results for $S_n(f)$ uniformly over $f \in F$ where F belongs to certain classes of kernels. Assumptions and proofs are motivated by the corresponding theory for empirical processes, though there are several significant differences in this case. Finally, an application to cross validation in density estimation is given.

Reviewer: [M.Denker](#)

MSC:

[60F15](#) Strong limit theorems
[62G05](#) Nonparametric estimation
[62E20](#) Asymptotic distribution theory in statistics

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