

WEAK CONVERGENCE OF AN EMPIRICAL MONOTONIC DEPENDENCE
FUNCTION UNDER DEPENDENCE

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Abstract: The weak convergence of a consistent estimator of a monotonic dependence function of two random variables X and Y is studied. The estimator is treated as a random element of $D[0, 1]$ and of $L_2([0, 1], \lambda)$, where λ stands for the Lebesgue measure. Its asymptotic distribution is derived for the two spaces in the following cases: independence of X and Y , distributions contiguous to independence, and dependence of X and Y . Except for the case of independence the asymptotic distributions depend strongly on the marginals of X and Y . Therefore, the asymptotic distribution of rank counterpart of the estimator is also considered. The obtained results extend the possibility of practical applications of the measure of monotonic dependence and its consistent estimator.

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