

WEAK CONVERGENCE UNDER MAPPING

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Abstract: For a given random element X of a metric space S and a measurable mapping h of S into a metric space S_1 such that $P\{X \in D_h\} > 0$ we give the conditions for a sequence of random elements $X_n, n \geq 1$, of the space S under which the convergence $X_n \xrightarrow{D} X$ implies $h(X_n) \xrightarrow{D} h(X)$ (Lemma 1) and stronger conditions for $\{X_n\}$ under which the convergence $X_n \xrightarrow{D} X$ implies $(X_n, h(X_n)) \xrightarrow{D} (X, h(X))$ (Theorem 3). Here D_h is the set of discontinuities of h . The case $S = D[0, \infty)$, $h(x) = \sup_{0 \leq t < \infty} x(t)$ is considered in detail.

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