ON THE APPROXIMATION OF A RANDOM VARIABLE BY A CONDITIONING OF A GIVEN SEQUENCE

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Abstract: Let $(\Omega, \mathcal{F}, P)$ be a non-atomic probability space. If $(X_n)$ is a sequence of r.v.’s satisfying $X_n \to 0$ a.s. (respectively, in probability) as $n \to \infty$ and $EX_n^+ \to \infty$, $EX_n^- \to \infty$ as $n \to \infty$, then for any r.v. $Y$ there exists a sequence $(\mathcal{U}_n)$ of $\sigma$-fields such that $E(X_n|\mathcal{U}_n) \to Y$ a.s. (respectively, in probability) as $n \to \infty$.

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