WEAK CONVERGENCE TO THE BROWNIAN MOTION OF THE PARTIAL SUMS OF INFIMA OF INDEPENDENT RANDOM VARIABLES

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Abstract: Let $\{Y_n, n \geq 1\}$ be a sequence of independent, positive random variables, defined on a probability space $(\Omega, \mathcal{A}, P)$, with the common distribution function F.

Put $Y_m^* = \inf(Y_1, Y_2, \ldots, Y_m), m \geq 1$, and

$$S_n = \sum_{m=1}^{n} Y_m^*, \quad n \geq 2, S_1 = 0.$$

The aim of this note is to give the rate of weak convergence of $\{S_n, n \geq 1\}$ to the Brownian motion. Moreover, the mixing limit theorem and the random functional limit theorem for the sums $S_n, n \geq 1$, are presented.

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