

CONDITIONED LIMIT THEOREMS FOR FUNCTIONS OF THE AVERAGE  
OF I.I.D. RANDOM VARIABLES

A. Szubarga  
D. Szynal

*Abstract:* Let  $\{\xi_k, k \geq 1\}$  be a sequence of i.i.d. random variables with  $E\xi_1 = 0$ ,  $0 < E\xi_1^2 = \sigma^2 < \infty$ . Form the random walk  $\{S_n, n \geq 0\}$  by setting  $S_0 = 0$ ,  $S_n = \xi_1 + \dots + \xi_n$ ,  $n \geq 1$ . Let  $T$  denote the hitting time of the set  $(-\infty, 0]$  by the random walk. Put  $X_n(t) = S_{[nt]}/\sigma\sqrt{n}$ ,  $0 \leq t \leq 1$ . Let  $h$  be a real-valued, right-continuous function on  $R$ , having left limits, with  $h(0) = 1$ , and continuous at 0. For  $\beta > 0$  we define the map  $H_n : D[0, 1] \rightarrow D[0, 1]$  by  $H_n(f) = fh(n^{-\beta}f)$ ,  $f \in D[0, 1]$ ,  $n \geq 1$ . Put  $Y_n = H_n(X_n)$ . This note deals with the asymptotic behaviour of  $Y_n$  conditioned on  $[T > n]$ . Moreover, we investigate the asymptotic behaviour in the question when  $n$  is replaced by  $N_n$ , where  $\{N_n, n \geq 1\}$  is a sequence of positive integer-valued random variables.

**2000 AMS Mathematics Subject Classification:** Primary: -; Secondary: -;

**Key words and phrases:** -

THE FULL TEXT IS AVAILABLE [HERE](#)