



Invariance principles for local times at the maximum of random walks and Lévy processes

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Résumé en anglais

We prove that when a sequence of Lévy processes $X^{(n)}$ or a normed sequence of random walks $S^{(n)}$ converges a.s. on the Skorokhod space toward a Lévy process X , the sequence $L^{(n)}$ of local times at the supremum of $X^{(n)}$ converges uniformly on compact sets in probability toward the local time at the supremum of X . A consequence of this result is that the sequence of (quadrivariate) ladder processes (both ascending and descending) converges jointly in law toward the ladder processes of X . As an application, we show that in general, the sequence $S^{(n)}$ conditioned to stay positive converges weakly, jointly with its local time at the future minimum, toward the corresponding functional for the limiting process X . From this we deduce an invariance principle for the meander which extends known results for the case of attraction to a stable law.

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