

On subexponentiality of the Lévy measure of the diffusion inverse local time; with applications to penalizations

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This talk is based on a joint work with Pierre Vallois [1]. We consider a recurrent linear diffusion on \mathbf{R}_+ and study the asymptotics of the distribution of its local time at 0 as the time parameter tends to infinity. Under the assumption that the Lévy measure of the inverse local time is subexponential this distribution behaves asymptotically as a multiple of the Lévy measure. Using spectral representations we find the exact value of the multiple. For this we also need a result on the asymptotic behavior of the convolution of a subexponential distribution and an arbitrary distribution on \mathbf{R}_+ . The exact knowledge of the asymptotic behavior of the distribution of the local time allows us to analyze the process derived via a penalization procedure with the local time. This result generalizes the penalizations obtained in Roynette, Vallois and Yor [2] for Bessel processes.

References

1. Salminen, P. and Vallois, P. (2009). On subexponentiality of the Lévy measure of the diffusion inverse local time; with applications to penalizations. *EJP* (to appear).
2. Roynette, B., Vallois, P. and Yor, M. (2008). Penalizing a $BES(d)$ process ($0 < d < 2$) with a function of its local time, V. *Studia Sci. Math. Hungar.*, Vol. 45(1), 67-124.