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Ruin probability with Parisian delay for a spectrally negative Lévy risk process

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In this paper we analyze so-called Parisian ruin probability that happens when surplus process stays below zero longer than fixed amount of time $\zeta > 0$. We focus on general spectrally negative Lévy insurance risk process. For this class of processes we identify expression for ruin probability in terms of some other quantities that could be possibly calculated explicitly in many models. We find its Cramér-type and convolution-equivalent asymptotics when reserves tends to infinity. Finally, we analyze few explicit examples.

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