



Mathematics > Probability

Optimal stopping problems for the maximum process with upper and lower caps

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This paper concerns optimal stopping problems driven by a spectrally negative Lévy process X_t . More precisely, we are interested in modifications of the Shepp-Shiryaev optimal stopping problem (also known as Russian optimal stopping problem). First, we consider a capped version of the latter and provide the solution explicitly in terms of scale function. In particular, the optimal stopping boundary is characterised by an ordinary differential equation involving scale function and changes according to the path variation of X_t . Secondly, in the spirit of the work of Shepp, Shiryaev and Sulem (2002), we consider a modification of the capped version of the Shepp-Shiryaev optimal stopping problem in the sense that the decision to stop has to be made before the process X_t falls below a given level.

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