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First passage times for some semi-regenerative processes

We consider Lvy processes time-changed by the inverse of an independent subordinator. These type of processes are examples of non-Markovian semi-regenerative processes with regeneration set given by the range of the subordinator. They have applications in, amongst others, physics (anamolous diffusions) and risk theory (Sparre Andersen model). We characterise the distribution of the first passage time of such a process over a linear boundary in terms of Wiener-Hopf factors associated with a family of Lvy processes. Particular stochastic boundaries can also be dealt with.

This is joint work with Corina Constantinescu and Pierre Patie.