The Gapeev-Kühn stochastic game driven by spectrally positive Lévy process.

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Abstract. In [P.V. Gapeev and C. Kühn, Perpetual convertible bonds in jump-diffusion models, Statist. Decisions, 23, (2005) 15-31], the stochastic game corresponding to perpetual convertible bonds was considered when driven by a Brownian motion and a compound Poisson process with exponential jumps. In this talk, we consider the same stochastic game but driven by a spectrally positive Lévy process and for a wider parameter range. Unlike the aforementioned paper, we do not appeal predominantly to stochastic analytic methods. Principally, this is due to difficulties in writing down variational inequalities of candidate solutions on account of then having to work with nonlocal integro-differential operators. We appeal instead to a mixture of techniques including fluctuation theory, stochastic analytic methods associated with martingale characterisations and reduction of the stochastic game to an optimal stopping problem.

Keywords Stochastic games, optimal stopping, pasting principles, fluctuation theory, Lévy processes.