Failure to observe threshold exceedance over a dense grid for a Lévy process

Jevgenijs Ivanovs*

*Aarhus University, Denmark

Abstract. For a general Lévy process X on a finite time interval, consider the probability of X exceeding some threshold $x > 0$ while being below x at the points of a uniform grid. We find exact asymptotics of this probability as the number of grid points tends to infinity. This result crucially depends on the small-time behaviour of the given Lévy process and, in particular, on the limit process when zooming-in.