Number of jumps in two-sided first-exit problems for a compound Poisson process

Shuanming Li[a] , Yi Lu[b] and Can Jin[a]
[a]Centre for Actuarial Studies, Department of Economics
The University of Melbourne, Australia
[b]Department of Statistics and Actuarial Science
Simon Fraser University, Canada

Abstract

In this paper, we study the joint Laplace transform and probability generating functions of two pairs of random variables: (1) the two-sided first-exit time and the number of claims by this time; (2) the two-sided up-crossing time and its associated number of claims. The joint transforms are expressed in terms of a generalized scale function. We also find explicit expressions for the joint density function of the two-sided first-exit time and the number of claims by this time. Numerical examples are presented for exponential claims.

Keywords: Classical risk model; Two-sided first-exit time; Two-sided up-crossing time; Number of claims; Generalized scale function

Speaker:

Yi Lu
Department of Statistics and Actuarial Science
Simon Fraser University
8888 University Drive
Burnaby, BC V5A 1S6, CANADA
Email: yilu@sfu.ca
Tel.: 1(778)7827231