Stochastic Processes of Order k and Ruin Probability

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Abstract

In this talk I introduce a compound birth process of order k and consider a risk model with defined counting process. Some functions related to risk models are analyzed. Then the derivation of the joint distribution of the time to ruin and the deficit at ruin as well as the ruin probability in infinite and finite time will be given. We consider then the compound Poisson process. As examples, the Poisson process of order k, and two types of Pólya-Aeppli processes of order k are analyzed. We discuss in detail the particular case of exponentially distributed claims.

Key words: Compound birth process, Pólya-Aeppli of order k process, Poisson of order k process, ruin probability.