

Bivariate Pólya-Aeppli Risk Model

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In this paper we define a bivariate counting process as a compound Poisson process with bivariate geometric compounding distribution and call it a bivariate Pólya-Aeppli process. We investigate some of its basic properties, recursion formulas and probability mass function. Then we consider a risk model in which the claim counting process is the defined bivariate Pólya-Aeppli process. For the defined risk model we derive the joint distribution of the time to ruin and the deficit at ruin as well as the ruin probability. We discuss in detail the particular case of exponentially distributed claims.