

Finite-time ruin probability formulae for Erlang claim inter-arrival times and dependent claim amounts

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Abstract. Explicit formulae for the probability of non-ruin of an insurance company, in a finite time interval are derived, assuming independent non-identically Erlang distributed claim inter-arrival times, any continuous joint distribution of the claim amounts and any non-negative, increasing real function, representing its premium income. The formulae are then extended to a risk model in which inter-arrival times are dependent random variables, obtained by randomizing the Erlang shape parameters. Numerical examples are also provided.

Keywords. finite-time (non-) ruin probability, risk process; Erlang claim inter-arrival times, dependent claim amounts, Appell polynomials.

Topic: Risk Theory

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