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Ruin problems for phase-type(2) risk processes. (English) Zbl 0971.91036
Scand. Actuar. J. 2000, No. 2, 147-167 (2000).

The paper deals with certain ruin related problems for a special Sparre Andersen model in which the inter-arrival times form a sequence of i.i.d. r.v.s with the density function $k(\cdot)$ satisfying the second order linear differential equation $k(t) + A_1 k'(t) + A_2 k''(t) = 0$ for $t > 0$, $A_2 > 0$. The compound geometric representation of the infinite time survival probability is obtained by the approach different of those due to *G. E. Willmot* [A Laplace transform representation in a class of renewal queueing and risk processes. Institute of Insurance and Pension Research, Paper No. 97-16, University of Waterloo (1997)] and *S. Asmussen* [Ann. Probab. 20, No. 2, 772-789 (1992; Zbl 0755.60049)]. The (defective) distributions of the surplus immediately prior to ruin and of the deficit at ruin is considered as well as the explicit solution for the infinite time ruin probability problem in the case when the individual claim size distribution is phase-type.

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MSC:

91B30 Risk theory, insurance (MSC2010)
62P20 Applications of statistics to economics

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Keywords:

Sparre Andersen risk model; ruin probability; surplus prior to ruin; severity of ruin; phase-type distribution

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References:

- [1] DOI: 10.1214/aop/1176989805 · Zbl 0755.60049 · doi:10.1214/aop/1176989805
- [2] DOI: 10.1016/0167-6687(92)90058-J · Zbl 0748.62058 · doi:10.1016/0167-6687(92)90058-J
- [3] Cox D. R., The theory of stochastic processes (1965) · Zbl 0149.12902
- [4] DOI: 10.1016/0167-6687(92)90026-8 · Zbl 0770.62090 · doi:10.1016/0167-6687(92)90026-8
- [5] DOI: 10.1016/S0167-6687(98)00003-1 · Zbl 0907.90097 · doi:10.1016/S0167-6687(98)00003-1
- [6] Grandell J., Aspects of risk theory (1991) · Zbl 0717.62100
- [7] Neuts, M. F. 1975. Probability distributions of phase-type, 173–206. Belgium: Liber Amicorum Professor Emeritus H. Florin, Dept. of Mathematics, University of Louvain.
- [8] Tijms H. C., Stochastic models: an algorithmic approach (1994) · Zbl 0838.60075
- [9] Willmot G. E., Paper No. 97-16, in: A Laplace transform representation in a class of renewal queueing and risk processes (1997)
- [10] DOI: 10.1016/S0167-6687(98)00030-4 · Zbl 0914.90074 · doi:10.1016/S0167-6687(98)00030-4

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