# ON APPROXIMATIONS OF RISK PROCESS WITH RENEWAL ARRIVALS IN $\alpha$-STABLE DOMAIN

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*Abstract:* In this paper we approximate risk process by an $\alpha$-stable Lévy motion $(1 < \alpha \leq 2)$. We consider two conditions imposed on the value of the premium rate. The first one assumes that the premiums exceed only slightly the expected claims (heavy traffic) and the second one assumes that the premiums are much larger than the average claims (light traffic). We consider the distribution of claim sizes belonging to the domain of attraction of an $\alpha$-stable law and the process counting claims is a renewal process constructed from random variables belonging to the domain of attraction of an $\alpha'$-stable law. Comparing $\alpha$ and $\alpha'$ we obtain three different asymptotic risk processes. In the classical model We get a Brownian diffusion approximation which fits first two moments. If $\alpha' > \alpha$, we get Mittag-Leffler distribution for the infinite time ruin probability, and if $\alpha' < \alpha$, we obtain exponential distribution for the infinite time ruin probability.

**2000 AMS Mathematics Subject Classification:** Primary 91B30; Secondary 60F17, 60G52.

**Key words and phrases:** Risk process, heavy traffic, light traffic, $\alpha$-stable Lévy motion.

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