

An effective method for constructing bounds for ruin probabilities for the surplus process perturbed by diffusion

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In this paper, we first study orders, valid up to a certain positive initial surplus, between a pair of ruin probabilities resulting from two individual claim size random variables for corresponding continuous time surplus processes perturbed by diffusion. The results can then be applied to obtain a smooth upper (lower) bound for the underlying ruin probability, which is constructed from exponentially distributed claims, provided that the mean residual lifetime function of the underlying random variable is non-decreasing (non-increasing). Finally, numerical examples are also given to illustrate the constructed upper bounds for ruin probabilities with comparisons to some existing ones.

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