

Title : Analysis of insurer's surplus process with capital injection strategy scheduled by the cumulated number of claims

Abstract : In this talk we propose capital injection strategy which is periodically implemented based on the number of claims in the classical compound Poisson risk model. Here the idea of capital injection strategy to keep the surplus above its minimum required level with an observation of process at certain number of claims, appears to be similar problem in reliability theory such as preventive maintenance policies done at certain shock number. Assuming a combination of exponentials for claim severities, we first derive an explicit expression for the discounted density of the surplus level at claim instants given that ruin does not yet. Using this result, the expected total discounted capital injection until ruin is studied. To obtain the solution of the differential equation for this quantity, the extended form of Lundberg fundamental equation is analyzed in detail. Finally we illustrate the applicability of the capital injection strategy and methodologies developed previously through various scenarios. This is a joint work with Ran Xu and Xixuan Han.