

Title : Modeling multivariate insurance losses with risk theoretic applications

Abstract : In the first part of the talk, to model highly correlated losses such as catastrophe losses, a class of multivariate mixed Erlang distributions with different scale parameters is considered. Some distributional properties involving higher-order equilibrium distributions and residual lifetime distributions are derived and in turn, we apply these results to study stop-loss moments, premium calculation, and the risk allocation problem in insurance risk theory. This is a joint work with Gordon E. Willmot.

In the second part, we consider an insurance portfolio containing several types of policies which may simultaneously face claims arising from the same catastrophe. A renewal counting process for the number of events causing claims and multivariate claim severities which are dependent on the occurrence time and/or the delay in reporting or payment are assumed. A unified model is proposed to study the time-dependent loss quantities. Furthermore, some numerical examples involving covariances and correlations of the different types of discounted aggregate (reported/unreported) claims until a fixed time are provided.