

# A multivariate loss model based on Markov Processes

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## Abstract

In this talk, we introduce a multivariate aggregate loss model based on Marked Markovian arrival processes (MMAP). This multivariate risk model may consider different types of losses, allowing dependencies among the claim frequencies, among the claim severities, as well as between claim frequencies and claim severities. We give the joint Laplace transform and the joint moments of the present value of the aggregate losses that have occurred during a fixed time period  $(0, t)$ . In addition, we provide formulas and computation procedures for the probability of ruin due to different types of claims. We provide numerical examples to illustrate the usefulness of the model.