DR. JOHANNA G. NEŠLEHOVÁ, McGill

Extreme or not extreme: the intricacies and challenges of rare event modeling

Accounting for dependence between rare events such as severe storms, floods, or large financial losses is essential for sound risk management. This can be accomplished very effectively by combining extreme-value theory with copula modeling, and by relying on the component-wise ranks of multivariate data to make inference. I will first explain how copulas can adequately capture the dependence between extreme events when the commonly used asymptotic extreme-value models are unsuitable. As extending these ideas to a large collection of risks calls for hierarchical models, I will next show how their structure might be inferred by identifying patterns in large-scale rank correlation matrices. Finally, I will use some of these techniques to explore the behavior of the largest claim size in a portfolio of possibly dependent insurance claims.