

The Working Group on Risk - CREAR, with the support of the IDS dpt, Institut des Actuaire, Labex MME-DII and the group BFA (SFdS), has the pleasure to invite you to the Seminar by:

Prof. Sidney RESNICK
Cornell University, USA

April 19, 2017, 12:30pm – 1:30pm
EEE - ESSEC La Défense (CNIT) – Room 202

Hidden Regular Variation under Full and Strong Asymptotic Dependence

Data exhibiting heavy tails in one or more dimensions is often studied using the framework of regular variation. In a multivariate setting this requires identifying specific forms of dependence in the data. As observed in various data sets from finance, insurance, network traffic, and social networks, multivariate data in standard form concentrates in particular directions and often does not cover the full space. Risk estimates for regions outside where the data concentrates will yield an estimate of 0 but this may be an artifact of the asymptotic regime chosen. The best known example of this is asymptotic independence where the probability of simultaneous large risks is estimated to be 0. We consider the notions of full and strong asymptotic dependence for bivariate data along with the idea of hidden regular variation in these cases. In a risk analysis setting, this leads to improved risk estimation accuracy when the usual regular variation methods provide a zero estimate of risk. Analyses of both real and simulated data sets illustrate concepts of generation and detection of such models. We consider both a social network data set and returns from oil stocks. (Joint work with Bikramjit Das, SUTD Singapore)

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Prof. Sidney RESNICK Cornell University (ORIE), USA

Sidney Resnick joined the Cornell faculty in 1987 after 9 years at Colorado State Univ., 6 years at Stanford Univ., and 2 years at the Technion Haifa, Israel. In 2008, he was designated as Lee Teng-Hui Professor in Engineering, and in 2012, Distinguished Affiliated Professor at the Technical Univ. of Munich. He has held visiting appointments at the Univ. of Amsterdam and the Amsterdam Mathematics Center; the Australian National Univ. and CSIRO in Canberra, Australia; the Technion in Israel; Sussex Univ. Brighton, UK; Erasmus University Rotterdam ; ETH Zurich ; UNC Chapel Hill; Columbia Univ.; Samsi, Research Triangle Park, NC; Technical Univ. Munich. Resnick is a fellow of the Institute of Mathematical Statistics (IMS), and while at Colorado State was an Oliver Pennock Distinguished Service Award winner. He is a founding associate editor of *Annals of Applied Probability*, and served as associate editor of leading applied probability journals: *J. Appl. Prob.*, *Ann. Appl. Prob.*, *Stoch. Proc. Applic.*, *Extremes*, *Stoch. Models*. He is a founding member of the editorial board of the Springer Series in Operations Research and Financial Engineering and on the editorial board of two probability series for Birkhauser. He is often asked for advice on tenure reviews and re-appointments as well as hiring decisions. He served a three-year term on the Council of IMS, and served on their ad hoc committee on electronic publishing. Sidney Resnick concluded a five year term as Director of Cornell's School of Operations Research and Information Engineering in June 2004. He obtained his PhD (Statistics, math & theoretical) from Purdue. His professional interests center in applied probability and cross the boundary into statistics. Foci include modeling questions for queues, storage facilities, extremes, data networks, risk estimation and estimation problems for tails and non-standard time series models. S. Resnick has authored or coauthored 171 papers and 4 books.



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