Workshop on Measures of Extremal Dependence

May 3rd, 2013

2:00-2:40 Philippe Soulier, Université Paris X
Title: Regularly varying time series with asymptotic independence

Abstract: A stationary time series is said to be regularly varying if all its finite dimensional distribution exhibit multivariate regular variation. Examples widely used in financial econometrics include the GARCH process and the so-called SV (stochastic volatility) process with heavy tailed innovations. The multivariate extremal properties of these processes differ fundamentally: the finite dimensional distributions of the GARCH process are asymptotically dependent, and those of the SV process are asymptotically independent. Asymptotic dependence means that exceedences over high threshold occur in clusters. This is the case of the GARCH process. To the contrary, asymptotic independence means that extremes occur in isolation; this is the case of the SV process. However, in both cases, a very high value does have influence on the following values, and it is of interest to model and stimate this influence. In the case of asymptotic dependence, many tools are available. In the case of asymptotic independence, these tools are usually degenerate. A more appropriate approach is to study the limiting conditional distribution of a suitably normalized future value of the time series, given the present one exceeds a high threshold. In this talk, we will present time series models with asymptotically independent regularly varying finite dimensional distribution and related statistical methodology.