

Title: conditional distributions of max-infinitely divisible processes

Abstract: We present in this talk recent results on the prediction problem in extreme value theory. Our main result is an explicit expression of the regular conditional distribution of a max-stable (or max-infinitely divisible) process $\{\eta(t)\}_{t \in T}$ given observations $\eta(t_i) = y_i$, $i = 1, 2, \dots, k$.

The starting point is the point process representation of max-infinitely divisible processes by Giné, Hahn and Vatan (1990). We carefully analyze the structure of the underlying point process and introduce the notions of extremal function, sub-extremal functions and hitting scenario associated to the constraints. This allows us to explicit the conditional distribution as a mixture over all hitting scenarios compatible with the conditioning constraints. This extends a result by Wang and Stoev (2011) dealing with the case of spectrally discrete max-stable random fields.

We believe this work offers new tools and perspective for prediction in extreme value theory together with numerous potential applications.