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Abstract

Mads Stehr

Extremal properties over time of an infinitely divisible random field with convolution equivalent Lévy measure

Joint with Anders Rønn-Nielsen

We consider a $(d+1)$-dimensional infinitely divisible random field indexed by space and time, and we find the asymptotic representation of the tail of its supremum. More specifically, we let the field be given as an integral of a kernel function with respect to a Lévy basis with convolution equivalent Lévy measure, and we show that the tail of the supremum is asymptotically equivalent to the tail of the Lévy measure. Actually, if Ψ is some appropriate operator, we show the more general result that the tail of Ψ applied to the field is asymptotically equivalent to the tail of the Lévy measure.

We define the kernel function in such a way that the field only depends on noise in the past, that is, the kernel is càdlàg in the time-coordinate. As part of the proof of the tail-behaviour, we also show that the field has a version with sample paths which are càdlàg in the time-coordinate.