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Abstract



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Limits and extremal behaviour of Lévy-based models

Joint with Eva B. Vedel Jensen

A continuous, infinitely divisible d -dimensional random field given as an integral of a kernel function with respect to a Lévy basis is considered. Under mild regularity conditions we derive central limit theorems for the moment estimators of the mean and the variogram of the field.

Under the supplementary assumption that the Lévy basis has a convolution equivalent Lévy measure, we derive an expression for the asymptotic probability that the supremum of the field exceeds the level x as this tends to infinity. A main result is that the asymptotic probability is equivalent to the right tail of the underlying Lévy measure. Furthermore, the asymptotic behaviour of the probability that an excursion set contains rotations of a given geometrical objects of fixed size, e.g. a ball or a line, is studied. This probability is similarly asymptotically described by the right tail of the Lévy measure.