

Hausdorff dimension of the contours of symmetric additive Lévy processes

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The last portion of the proof of Theorem 3.2 (pp. 161–162) in [1] contains a deceptively subtle logical flaw: the proof correctly establishes that the lower bound for the Hausdorff dimension $\dim_{\text{H}}(\mathcal{X}^{-1}(\{0\}) \cap F)$ holds with positive probability; but from that we incorrectly deduced that the said Hausdorff-dimension bound holds almost surely on $\{\mathcal{X}^{-1}(\{0\}) \cap F \neq \emptyset\}$. To correct this, the statements of some of the results need to be altered slightly.

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- (1.9) should be replaced by the following:

$$\dim_{\mathbb{H}} \mathfrak{X}^{-1}(\{0\}) = \sup \left\{ q > 0 : \int_{[0,1]^N} \frac{\Phi(\mathbf{t})}{\|\mathbf{t}\|^q} d\mathbf{t} < \infty \right\} \text{ with positive probability.}$$

This follows from [2, Theorem 2.10] and [1, (5.22)].

- (3.14) should be replaced by

$$\begin{aligned} & \left\| \dim_{\mathbb{H}} \left(\mathfrak{X}^{-1}(\{0\}) \cap F \right) \right\|_{L^\infty(\mathbb{P})} \\ &= \sup \left\{ 0 < q < N : I_{\Phi}^{(q)}(\mu) < \infty \text{ for some } \mu \in \mathcal{P}(F) \right\}. \end{aligned}$$

- The lower bound in (3.16) should be replaced by

$$\dim_{\mathbb{H}} F - \overline{\text{ind}}(\Phi) \leq \left\| \dim_{\mathbb{H}} \left(\mathfrak{X}^{-1}(\{0\}) \cap F \right) \right\|_{L^\infty(\mathbb{P})}.$$

- (3.20) and (3.21) should be replaced, respectively, by

$$\left\| \dim_{\mathbb{H}} \left(\mathfrak{X}^{-1}(\{0\}) \cap F \right) \right\|_{L^\infty(\mathbb{P})} = \dim_{\mathbb{H}} F - \sum_{k=1}^d \frac{1}{\alpha_k}$$

and

$$\left\| \dim_{\mathbb{H}} \left(\mathfrak{X}^{-1}(\{0\}) \cap F \right) \right\|_{L^\infty(\mathbb{P})} = \dim_{\mathbb{H}} F - \frac{d}{\alpha}.$$

- (3.24) should be replaced by the following:

$$\dim_{\mathbb{H}} \mathfrak{X}^{-1}(\{0\}) = N - k(\alpha) + \frac{\sum_{1 \leq j \leq k(\alpha)} \alpha_j - d}{\alpha_{k(\alpha)}} \text{ with positive probability.}$$

The derivations remain.

References

1. Khoshnevisan, D., Shieh, N.-R., Xiao, Y.: Hausdorff dimension of the contours of symmetric additive Lévy processes. *Probab. Theory Relat. Fields* **140**, 129–167 (2008)
2. Khoshnevisan, D., Xiao, Y.: Level sets of additive Lévy processes. *Ann. Probab.* **30**, 62–100 (2002)