

ON INFINITELY DIVISIBLE SEMIMARTINGALES

JAN ROSIŃSKI (JOINT WORK WITH ANDREAS BASSE-O'CONNOR)

Sticker's theorem says that a Gaussian process is a semimartingale if and only if it is the sum of an independent increment Gaussian process and a Gaussian process of finite variation. We consider generalizations of this result to infinitely divisible (ID) processes.

We show that Sticker's theorem does not hold for general ID processes, and prove that it does hold for semimartingales representable by infinitely divisible random measures. All Gaussian processes are representable. Using [1] we characterize semimartingales within the class of stationary increment mixed moving averages; this class includes linear fractional process and mixed moving averages as particular cases. The proof of the main result relies on series representations of jumps of càdlàg ID processes established in [2].

REFERENCES

- [1] A. Basse-O'Connor and J. Rosiński, Structure of infinitely divisible semimartingales. *Stochastic Process. Appl.* 123 (2013), 1871–1890.
- [2] A. Basse-O'Connor and J. Rosiński, On the uniform convergence of random series in Skorohod space and representations of càdlàg infinitely divisible processes. *Ann. Probab.*, to appear.