

ERGODICITY AND MIXING OF ANOMALOUS DIFFUSION PROCESSES

MARCIN MAGDZIARZ

We study ergodic properties of some classes of anomalous diffusion processes. Using the recently developed measure of dependence called the Correlation Cascade, we obtain necessary and sufficient conditions for ergodicity and mixing of stable processes. The derived refinement of the classical Maruyama's mixing theorem plays the key role in the proofs. We extend the results to the class of Lévy-driven stochastic processes. We also discuss ergodicity and mixing of the generalized diffusion equation. Some examples and applications of the results are presented.

REFERENCES

- [1] M. Magdziarz, *Correlation cascades, ergodic properties and long memory of infinitely divisible processes*, Stoch. Proc. Appl. 119, 3416-3434 (2009)
- [2] M. Magdziarz, *A note on Maruyama's mixing theorem*, Theory Probab. Appl. 54, 407-409 (2010)
- [3] M. Magdziarz, A. Weron, *Ergodic properties of anomalous diffusion processes*, Ann. Phys., 326, 2431-2443 (2011)
- [4] M. Magdziarz, R.L. Schilling, *Asymptotic properties of Brownian motion delayed by inverse subordinators*, preprint (2013).