Invariant measures of Itô-processes

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We develop an integral criterion for invariant measures of Lévy-type Itôprocesses. This class of processes is quite general as it contains rich Feller processes, solutions of Lévy driven SDEs and, more general, solutions of Skorokhodtype SDEs. Our criterion is based on the symbol of the corresponding processes. In contrary to standard criteria for invariant measures based on the generator, no test functions and hence no information on the domain of the generator is needed.

Several examples will be discussed; in particular we will apply this criterion on generalized Ornstein-Uhlenbeck (GOU) processes and show how it can be used to prove new results on distributional properties of their invariant distributions. E.g., we will see that this approach allows to determine which positive stable distributions can be obtained as invariant laws of GOU processes.