

Christian Fonseca-Mora (University of Costa Rica)

Tightness and Weak Convergence of Probabilities on the Skorokhod Space on Spaces of Distributions

Abstract

The purpose of this talk is to discuss some new results on tightness and weak convergence of probability measures on the Skorokhod space of right-continuous with left limits maps taking values in some classes of infinite dimensional spaces. To introduce the context of our study, we start by reviewing some definitions from the Skorokhod topology on metric spaces, and then by considering in some detail the extension carried out by I. Mitoma (1983) to the space of tempered distributions. The second part of the talk will be dedicated to the exposition of our generalization of Mitomas work to the case of the dual of a general nuclear space (of which spaces of distributions are a particular example). In particular, we establish analogues of Minlos theorem and the Lévy's continuity theorem to provide necessary and sufficient conditions for tightness of a family of probability measures on the Skorokhod space and sufficient conditions for weak convergence of a sequence of probability measures. Applications of our results to the study of weak convergence of Lévy processes with values in the spaces of distributions will be given.