



Labex MME-DII

Modèles Mathématiques et Économiques
de la Dynamique, de l'Incertitude et des Interactions
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CHAIRE INTERNATIONALE

Convergence in Distribution on Metric and Submetric Spaces

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Wednesdays, 10:00-11:15 and 11:30-12:45

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Abstract We provide a new characterization of the topology of convergence in distribution of random elements with tight laws and values in a metric space. This characterization, when considered on submetric spaces, leads to a new notion of convergence in distribution, which preserves the whole power of the metric theory and is applicable in a wide range of topological spaces, including sequential spaces.

Content 1. A new look at convergence in distribution on metric and submetric spaces (Convergence in distribution on metric spaces. Switching to submetric spaces. Why submetric spaces? Convergence in distribution on sequential spaces. An example: weak topology on Hilbert spaces) 2. S-topology on the Skorokhod space (Definition and basic properties. Functional convergence of stochastic processes in S-topology) 3. S-topology in action (Condition UT and S-topology. Weak convergence of stochastic integrals. An almost sure approximation for the predictable process in the Doob-Meyer decomposition theorem. Weak solutions to BSDE's. Functional convergence of linear processes with heavy-tailed innovations. A review of other applications).