In 44th Summer Symposium in Real Analysis

Participant
Family name : Morawiec
   First name : Janusz
Institution : University of Silesia
   Email : janusz.morawiec@us.edu.pl

Title of the talk
Invariant measures for uncountable random interval homeomorphisms

Coauthor(s)
Tomasz Szarek

Abstract
Fix a probability space $(\Omega, \mathcal{A}, P)$ and a function $f: [0, 1] \times \Omega \to [0, 1]$ such that for every $x \in [0, 1]$, the function $f(x, \cdot)$ is $\mathcal{A}$-measurable, and for every $\omega \in \Omega$, the function $f(\cdot, \omega)$ is an increasing homeomorphism of $[0, 1]$ onto itself. Assume that for any $x \in (0, 1)$ there exists a set $\Omega_x^- \in \mathcal{A}$ such that $P(\Omega_x^-) > 0$ and $f(\omega)(x) < x$ for every $\omega \in \Omega_x^-$, or for any $x \in (0, 1)$ there exists a set $\Omega_x^+ \in \mathcal{A}$ such that $P(\Omega_x^+) > 0$ and $x < f(\omega)(x)$ for every $\omega \in \Omega_x^+$. We give a necessary and sufficient condition for the iterated function system with probabilities $(\{f(\cdot, \omega) \mid \omega \in \Omega\}, P)$ to have exactly one invariant measure $\mu_*$ with $\mu_*(0, 1) = 1$. We also investigate the properties of this iterated function system with probabilities.