Abstract

Is there a sufficient condition for continuity of sample paths of a random process? Or, is it at least possible to modify the process so that the paths would already be continuous? An affirmative answer is given by the Kolmogorov-Chentsov theorem, whose statement and proof are the subject of this thesis. First, we introduce the notion of a random process and briefly focus on the so-called Gaussian processes. The main focus of the second chapter is the Kolmogorov-Chentsov theorem, its proof and some auxiliary assertions are given. In the final third chapter, we deal with the applications of the theorem to some well-known Gaussian processes such as the Wiener process or the Brownian bridge. Finally, we look into the Poisson process, which on the contrary does not satisfy the condition of the theorem.