

The main subject of the Bachelor's thesis is the Pólya-Lundberg process. It is a non-homogenous Markov chain that represents a generalization of the Poisson process. The main aim of the thesis is to depict some of its important features, to prove them and to put them into context. The thesis is sectioned into four chapters where the first chapter introduces basic concepts and objects that are crucial for understanding of this text. In the second chapter we define the Pólya-Lundberg process and we derive some of its main characteristics. The third chapter is devoted to the relationship between the Pólya-Lundberg process and the mixed Poisson process. Lastly, the final chapter discusses the so-called urn models, especially its generalization for which there is shown that if several conditions are fulfilled the generalized urn model converges to the Pólya-Lundberg process at a fixed time.