

Abstract: In this thesis we examine estimation of the  $K$ -function which is an important second-order characteristic in the theory of spatial point processes. Besides Ripley's  $K$ -function based on a spherical structuring element we also work with the multiparameter  $K$ -function where the structuring element is rectangular. We consider the Poisson point process model, which is the fundamental model for complete spatial randomness. We derive expressions for both bias and variance of the estimators. The primary goal of this thesis is the study of different edge correction methods that are available for the  $K$ -function. Using simulations we also study a few variance approximations proposed in the literature and compare them with empirical variances.