

המחלקה למתמטיקה, בן-גוריון

קולוקוויום

ביום שלישי, 18 בנובמבר, 2025

בשעה 14:30 – 15:30

ב-101 Math

ההרצאה

Statistical properties of Markov chains

חינתן על-ידי

Florida) of (University Hafouta Yeor

תקציר: The central limit theorem (CLT) and related results for stationary weakly dependent random sequences have been studied extensively since the beginning of the 20th century. However, the work of Berenstien (1927) and others in the past century has shown that in many physical phenomena, external forces, measurement errors, and the effect of the observer (e.g. unknown variables like storms) lead to non-stationary sequences. This means that local laws of physics depend on time and us leads to non-stationary behaviour. The asymptotic theory of non-stationary sequences has been studied extensively since the 1950s, but it is still developing compared with the theory of stationary processes. In this talk we will focus on inhomogeneous Markov chains. For well contracting Markov chains, the CLT was first proven by Dobrushin (1956). Since then many results have been proven for stationary Markov chains. In 2021 Sarig and Dolgopyat proved local central limit theorems (LCLT) for chains.

optimal proved H and Dolgopyat 2022 In chains. Markov inhomogeneous for concerning literature in gap big a closed results These CLT. Dobrusin's in rates CLT case. non-stationary the concerns book 2021 their in Sarig and Dolgopyat by raised problem open An functions of sequence underlying the when is that shifts, Markov for theorems limit circumstances Two chain. the of path entire the on depend sums partial the forms that random and matrices random of products are arises dependence such where functionals the when instances other many are there and functions, iterated path. entire the on depend precisely, More problem. above the to solution our present will we talk this In well sufficiently of class wide a for LCLT and rates CLT optimal CLT, prove we the though Even memory. infinite with functionals and chains Markov mixing for already new be to seem results our complicated, more is case inhomogeneous chains. stationary