سمینار هفتگی ماده چگال نرم

Anomalous diffusion and coherent motion of chromosome domains

Hossein Salari

Laboratory of Biology and Modelling of the Cell, ENS de Lyon, **France**

Abstract

Over the last decade, the chromosome conformation capture method (Hi-C) revealed the genome hierarchically organized at different levels, from topologically associated domains (TADs) to complex compartmentalization at chromosome territories. The dynamic nature of chromosome organization plays a central role in the regulation on many crucial processes, such as DNA transcription and replication. Recently, using the live-tracking of fluorescently tagged genome loci on 2D optical layer, many studies highlighted the anomalous diffusion and visco-elastic motion of chromosome loci as well as correlated motions of spatial regions, which are in contrast with simple polymer model (Rouse model). Here, by using heteropolymer model and partitioning into different interacting domains, we show that dynamics of monomers in large enough TADs (larger than 100 Kbp) are correlated. Also, these coherent motions lead to a sub-diffusive motion at short time scales while at longer time scales we observe a transition to super-diffusive motion, which are in good agreement with experimental data.

زمان: شنبه ۹۹/۴/۱۴ ساعت ۱۵:۳۰

مکان(کلاس مجازی آقای دکتر اجتهادی) :

https://vclass.ecourse.sharif.edu/ch/ejtehadi