Driven anomalous diffusion: A model for chromosome segregation?

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The cell division is a dynamic process, which involves the partitioning of chromosomes and their copies into daughter cells. One way to access this complex biological process is to label a particular locus, and track its biased stochastic motion. There is indeed a recent attempt to track the motion of the origin of replication (*oriC*) during the segregation process of bacterial chromosome, and analyze it based on the simple polymer physics model [1].

In this talk, I will summarize basic aspects of polymer dynamics, in particular, the anomalous drift and diffusion of a tagged monomer, the viscoelastic response and associated memory effect, which are relevant to the analysis[2,3]. I will try to provide an intuitive picture on how and why the motion of a tagged monomer in a long polymer is anomalous, and how it resembles to the motion of chromosome locus. Finally, I would like to discuss what we can get from this sort of analysis on the chromosome segregation.

References

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