MAR05-2004-020010

Abstract for an Invited Paper
for the MAR05 Meeting of
the American Physical Society

Molecular Motors with Finite and Infinite Processivity on Disordered Tracks

YARIV KAFRI, Curie Institute

The dynamics of molecular motors moving on a heterogeneous tracks, like DNA or RNA will be discussed. Motivated by recent single molecule experiments, a molecular motor which is using chemical energy to move along the substrate while an external force opposes its motion will be considered. First, the case of infinite processivity, in which the motor is assumed to remain bound to the track, will be considered. We show that near the stall force the dynamics of the motor become anomalous due to the heterogeneous track. Then the effect of finite processivity, where motors occasionally detach from the track will be discussed. Here we show that motors that remain on the track for long times can become localized at preferred positions. The conditions under which localization occurs will be discussed.