

Abstract Submitted
for the MAR06 Meeting of
The American Physical Society

Polymer dynamics within a harmonic confinement potential

JEREMY SCHMIT, JOSHUA MARTIN, BULBUL CHAKRABORTY, JANÉ KONDEV, Brandeis University — We study the effects of confinement on the Rouse dynamics of polymers inspired by the question of chromosome confinement in the nucleus. We propose a simple model of a polymer diffusing within a three-dimensional harmonic potential. Within this model, the Rouse modes relax as independent particles within the harmonic potential so that the inverse relaxation times increase linearly with the confinement strength. This linear regime is also seen in simulations of phantom chains trapped within a hollow sphere. We also address the effect of self-avoidance using a self-consistent variational approximation to the propagator and compare the results to simulation.

Jane' Kondev
Brandeis University

Date submitted: 05 Dec 2005

Electronic form version 1.4