

Abstract Submitted
for the APR16 Meeting of
The American Physical Society

Physical Model of Segregation of E.coli Chromosomes using Molecular Dynamics. FAISAL ALNAHHAS, Hendrix Coll, SAVAN KHAREL, Davidson College — Chromosome segregation is one of the most interesting physical processes during a bacterial cell cycle. We will use molecular dynamics simulations which will help us understand how strongly confined polymer segregates. In the presentation, we will discuss how segregation of initially overlapping circular chromosome occurs during a cell cycle. In particular, we will describe the role played by entropic mechanism in the demixing of overlapping circular polymer confined in a cylindrical boundary. We discuss how our polymer chains modeled as an E-coli chromosome experiences an effective repulsion, which ultimately leads to partition driven by the entropic forces. Also, we will also discuss how the segregation of circular chromosome in cylindrical confinement differs from a spherical confinement. Finally, we will discuss the role played by proteins and supercoiling in during the segregation process.

Faisal Alnahhas
Hendrix Coll

Date submitted: 06 Jan 2016

Electronic form version 1.4