Abstract Submitted
for the MAR05 Meeting of
The American Physical Society

Subcellular protein localization in *E. coli***: diffusion and membrane attachment of MinD molecules** RAHUL KULKARNI, Department of Physics, Virginia Tech, KERWYN HUANG, Department of Molecular Biology, Princeton University, MORTEN KLOSTER, NEC Labs, NED WINGREEN, Department of Molecular Biology, Princeton University — In *E. coli*, accurate cell division depends upon the oscillation of Min proteins. We provide a model for polar localization of MinD based only on diffusion, a delay for nucleotide exchange, and different rates of attchment to the bare membrane and occupied membrane. We derive analytically the probability density, and correspondingly the length scale, for MinD attachment zones. Our simple analytical model illustrates the processes giving rise to the observed localization of cellular MinD zones.

Rahul Kulkarni
Virginia Tech