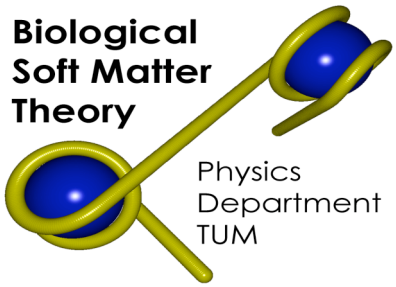

"Soft-Matter Seminar"

Statistical Mechanics of Semiflexible Loop Polymers in Two Dimensions

Prof. Hirofumi Wada

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Abstract:

Physical properties of topologically constraint polymers, such as circular or knotted DNA, are the focus of recent theoretical and experimental researches. In particular, effects of self-avoidance and topological constraints become most highlighted in low dimensions. We study here the conformation of semiflexible polymer rings in two dimesion by using extensive Brownian dynamics simulations and analytic arguments. Our analytic and numerical results show excellent agreements with a recent atomic force spectroscopy experiment for plasmid DNA adsorbed on a mica surface [1] over an entire range of the DNA flexibility. By employing scaling arguments, we explain how the combined effects of topology and self-avoidance can lead to an exiotic behavior of two dimensional circular polymers, such as long-rang spatial correlations in the bond orientaional order observed in the experiment

Mittwoch, den 4.2.2008
16:15 Uhr
Raum PH 3344

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