

1033-82-182

Esaias J Janse van Rensburg* (rensburg@yorku.ca), York University, Department of Mathematics and Statistics, Toronto, Ontario M3J 1P3, Canada. *Knotting in Stretched Lattice Polygons.*

Knotting in a lattice polygon model of ring polymers is examined when a stretching force is applied to the polygon. In this talk I explain why cut-planes occurs in a polygon at sufficiently large forces of the applied force. By exploiting cut-planes, I prove a pattern theorem in the stretching regime for sufficiently large applied forces. This theorem can be used to examine the incidence of entanglements such as knotting and writhing. In particular, for arbitrarily large positive, but finite, values of the stretching force, the probability that a stretched polygon is knotted approaches one as the length of the polygon increases. In the case of writhing, for stretched polygons of length n , and for every function $f(n) = o(\sqrt{n})$, the probability that the absolute value of the mean writhe is less than $f(n)$ approaches zero as $n \rightarrow \infty$, for sufficiently large values of the applied stretching force. (Received September 10, 2007)