

Meeting: 1002, Pittsburgh, Pennsylvania, SS 7A, Special Session on Knots and Macromolecules

1002-82-120 **Tetsuo Deguchi*** (deguchi@phys.ocha.ac.jp), 2-1-1 Ohtsuka, Bunkyo-ku, 112-8610 Tokyo, Japan. *Probability distribution of distance between two given nodes of a random knot.*

We discuss the probability distribution function of the distance between two selected nodes of a random polygon having a fixed knot type. We evaluate it numerically through simulation making use of some knot invariants. The function is important in the statistical physics of ring polymers. In fact, it is related to some fundamental quantities such as scattering functions and two-point correlation functions. We have found that the distribution function can be roughly approximated by the Gaussian distribution, when the number of nodes between the two nodes is large such as the case of opposite nodes. However, there is a small but definite deviation from the Gaussian one, when the number of nodes between the two nodes is small.

The talk is based on the paper: A. Yao et al., J. Phys. A: Math. Gen. Vol. 37 (2004) 7993-8006, and also on recent collaboration with A. Yao. (Received September 10, 2004)