1139-92-465 **Tetsuo Deguchi*** (deguchi@phys.ocha.ac.jp), Ochanomizu University, 2-1-1 Ohtsuka, Bunkyo-ku, Tokyo, 112-8610, and **Erica Uehara**, Ochanomizu University, 2-1-1 Ohtsuka, Bunkyo-ku, Tokyo, 112-8610. *Knotting probability of self-avoiding polygons under a topological constraint: A sum rule derived from the factorization property.*

We define the knotting probability of a knot K by the probability for a random polygon (RP) or self-avoiding polygon (SAP) of N segments having the knot type K. We investigate it for the SAP consisting of hard cylindrical segments of unit length and radius $r_{\rm ex}$. Here we remark that the cylindrical SAP gives a model of circular DNA which are negatively charged and semiflexible, where radius $r_{\rm ex}$ corresponds to the screening length. For various prime and composite knots we numerically show that a compact formula describes the knotting probabilities for the cylindrical SAP as a function of segment number N and radius $r_{\rm ex}$.

From the factorization property of the knotting probability we derive a sum rule among the estimates of a fitting parameter, which we call the knot coefficient, for all prime knots, which suggests the local knot picture and the dominance of the trefoil knot in the case of large excluded volume.

[1] E. Uehara and T. Deguchi, Knotting probability of self-avoiding polygons under a topological constraint, J. Chem. Phys. Vol. 147, 094901 (2017) (Received February 18, 2018)