

**SCATTERING FUNCTION AND CORRELATION
FUNCTION OF RANDOM KNOTS: AN APPLICATION OF
KNOT THEORY TO POLYMER PHYSICS**

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We discuss the scattering function of random polygons that have a fixed knot type, which we call random knots, studying the distribution function of distance between two fixed nodes of a random knot, i.e. a kind of correlation function. The two functions should be closely related, since the former is associated with the Fourier transform of the latter. However, there has been no analytic argument on the connection between them. Through computer simulations of random knots, we introduce an approximate formula for the distribution function of distance between two fixed nodes of a random knot, and then derive some properties of the scattering function of random knots analytically through the formula.

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