

KNOTTING PROBABILITIES AND PATTERN THEOREMS FOR
POLYGONS IN TUBES

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I will present recent work with Soteris, Eng, Shimokawa and Ishihara on the knotting properties of self-avoiding polygons in narrow tubes of the cubic lattice. These serve as an idealized model of circular DNA, confined to a small space like a viral capsid or passing through a nanopore. I will focus on transfer matrix methods and how they can be applied to problems of knotted polygons, including a pattern theorem of sorts for unknotted polygons, and the development and results of new Monte Carlo methods.