1041-82-292 **Mahshid Atapour*** (atapour@math.usask.ca), 106-Wiggins Road, Saskatoon, SK S7N 5E6, Canada. *The linking probability of a pair of lattice polygons spanning a lattice tube.*

For pairs of n-edge lattice polygons confined to a tube and constrained so that they have a pair of edges, one from each polygon, within a fixed distance from each other, it is established that the exponential growth rate of the number of topologically linked polygon pairs is equal to that of the number of topologically unlinked polygon pairs. So, we cannot say that all but exponentially few sufficiently long pairs of self-avoiding polygons are linked. It is possible (although not proved) that the linking probability goes to one as $n \to \infty$, but it will not go to one exponentially rapidly. One can ask *under what conditions does the linking probability of a pair of lattice polygons confined to a tube go to one (goes to one exponentially rapidly)?* I will introduce a model of a pair of lattice polygons which considers a much more severe distance constraint, and present some theoretical results about the linking probability. For this model, it is established that the homological linking probability goes to one at least as fast as $1 - O(n^{-1/2})$. Using a "pattern" due to C. Ernst, it is also shown that the topological linking probability goes to one exponentially rapidly. This is a joint work with C. Soteros, C. Ernst and S. Whittington. (Received August 12, 2008)