1161-82-60 **EJ Janse van Rensburg*** (rensburg@yorku.ca), Mathematics & Statistics, York University, Toronto, Ontario M3J 1P3, Canada. *Phase diagrams of linked and unlinked polygons in a square.*

The effect of entanglements on the physical properties of polymers and strings remains an important topic in biology and related areas. In this talk I will give account of a simple two dimensional model examining phase behaviour in a statistical mechanics model of linked and unlinked polygons (as models of ring polymers). Our model is composed of two square lattice polygons confined to a square, in one case linked to each other (by one polygon being placed inside the other), and in the other case not linked (by their interiors being disjoint). I will discuss briefly the numerical approach to this problem using a parallel implementation of the GARM algorithm, and then discuss the phase diagram, and how it depends on the underlying topology of the two polygons. Generally, the phase diagram includes a multicritical point where lines of first order and continuous transitions meet. I will discuss the properties of these transitions, and in some cases determine scaling exponents characterising them. This study is joint work with Enzo Orlandini (Padua, Italy). (Received August 07, 2020)