1033-57-71 **Eric J Rawdon*** (ejrawdon@stthomas.edu), Department of Mathematics, University of St. Thomas, 2115 Summit Ave., Saint Paul, MN 55105, and **Andrzej Stasiak**, **John C Kern**, **Michael Piatek**, **Patrick Plunkett** and **Kenneth C Millett**. *Asphericity of Random Equilateral Polygons.* Preliminary report.

The asphericity *asph* is a quantity between 0 and 1. For a fixed polygonal configuration, it measures the degree to which the ellipsoid of inertia is rod-like ($asph \approx 1$) or spherical ($asph \approx 0$). We present computer simulations to examine the differences between the average asphericity of polygons with constrained and unconstrained topology. We find that, on average, polygons constrained to a particular knot are more spherical than polygons with unconstrained topology for small numbers of edges. However, as the number of edges grows, the topologically-constrained polygons take on less spherical configurations than the unconstrained polygons. The number of edges at which the scaling profile for a fixed knot type and the phantom polygons intersect is known as the equilibrium length with respect to the asphericity. This equilibrium length will be compared to equilibrium lengths with respect to other spatial measurements of polygonal configurations. (Received August 31, 2007)