1049-57-121 **Christian Laing** and **De Witt Sumners*** (sumners@math.fsu.edu), Department of Mathematics, Tallahassee, FL 32306. *The Writhe of Oriented Polygonal Graphs.*

The directional writhe of a simple closed curve is the sum of the signed crossings in the projection of the curve in the given direction. The writhe of a simple closed curve in 3-space is the average over all directions of directional writhe. We extend [1] this definition to apply to edge-oriented (each edge has an arrow on it) finite spatial graphs. This definition of writhe covers spatial polygonal arcs and non-connected graphs, and does not require the ad hoc closing of arcs to eliminate the problems posed by endpoints. This talk will discuss the properties of writhe of graphs, the proof of writhe additivity for connected sums, and applications to DNA and RNA.

[1] C. Laing and D.W.Sumners. The Writhe of Oriented Polygonal Graphs, Journal of Knot Theory and Its Ramifications 17 (2008), 1575-1594. (Received February 28, 2009)