1033-57-185   **Isabel K. Darcy*** (`idarcy@math.uiowa.edu`), Mathematics Department, 14 MLH, University of Iowa, Iowa City, IA 52242. *Tangle analysis of protein-DNA complexes.*

Protein-DNA complexes have been modeled using tangles. A tangle consists of arcs properly embedded in a 3-dimensional ball. The protein is modeled by the 3D ball while the segments of DNA bound by the protein can be thought of as arcs embedded within the protein ball. This is a very simple model of protein-DNA binding, but from this simple model, much information can be gained. The main idea is that when modeling protein-DNA reactions, one would like to know how to draw the DNA. For example, are there any crossings trapped by the protein complex? How do the DNA strands exit the complex? Is there significant bending? Tangle analysis cannot determine the exact geometry of the protein-bound DNA, but it can determine the overall entanglement of this DNA, after which other techniques may be used to more precisely determine the geometry. The latest mathematics and software for solving tangle equations will be discussed. (Received September 10, 2007)